

Quality of life in patients with coronary heart disease before and six months after coronary artery bypass grafting (CABG)

Ποιότητα ζωής ασθενών με στεφανιαία νόσο πριν και έξι μήνες μετά την αορτοστεφανιαία παράκαμψη

Abstract at the end of the article

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Υποβλήθηκε: 14/01/2023

Επανυποβλήθηκε: 15/05/2023

Εγκρίθηκε: 30/07/2024

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Introduction: Coronary artery bypass grafting (CABG) is one of the most effective ways of treating coronary heart disease. It can significantly relieve patients' symptoms of myocardial ischemia and hypoxia and improve their quality of life (QoL). The aim of this study was to explore QoL among patients with coronary heart disease before and six months after CABG.

Material Methods: In the present study were enrolled 115 patients who underwent CABG. Data collection was performed by the completion of the "Short Form Survey" (SF-36) Greek version which included patients' characteristics. The level of statistical significance was set at $p < 0.05$.

Results: Of the 115 participants, 74.8% were men while 42.6% was 60-69 years old, and 71.3% had positive family history of cardiac disease. Moreover, 41.7% underwent a single vessel CABG. Patients showed significant improvement in QoL six months after surgery in all dimensions of the SF-36 scale, $p < 0.001$. More in detail, the results showed the following values between before CABG and 6 months measurements physical functioning 54.1 ± 25.2 vs 78.7 ± 13.2 ($p < 0.001$), physical role 41.0 ± 28.8 vs 65.0 ± 23.2 ($p < 0.001$), bodily pain 42.0 ± 24.4 vs 73.7 ± 19.0 ($p < 0.001$), general health 44.3 ± 23.5 vs 63.5 ± 19.1 ($p < 0.001$), vitality 33.8 ± 21.9 vs 61.3 ± 18.4 ($p < 0.001$), social functioning 34.2 ± 25.7 vs 62.9 ± 17.7 ($p < 0.001$), emotional role 47.3 ± 30.9 vs 66.0 ± 27.7 ($p < 0.001$), and mental health 43.2 ± 25.4 vs 64.3 ± 21.5 ($p < 0.001$).

Conclusion: The present study showed overall significant improvement six months after CABG. Sociodemographic and clinical factors were associated with QoL.

Key words: Coronary heart disease, patient's quality of life, coronary artery bypass grafting

Introduction

The incidence of coronary heart disease (CHD) remains high in Europe as well as in USA, in spite of remarkable advances in diagnostics, therapeutic interventions, and prevention. CHD is the third leading cause of mortality globally, accounting for 17,9 million deaths annually.^{1,2,3}

Coronary artery bypass grafting (CABG) is a surgical treatment option for CHD to restore blood flow to infarcted myocardium, thus improving cardiac function. This common cardiac surgery procedure, is performed in 200,000 individuals in USA while in west Europe the incidence rate is 62 per 100,000 individuals.⁴

As all surgical treatments, CABG has potential complications which include stroke, incision site infection, graft failure, renal failure, postoperative atrial fibrillation but in general terms, it improves patients' quality of life (QoL).⁵ QoL is well a documented issue in illness which refers to all dimensions of health (physical, psychological, social) as influenced by a person's experiences, beliefs, expectations, and perceptions. QoL is a widely used tool that reflects effectiveness of treatment and quality of provided health care. Assessment of QoL promotes patient-centered and active participatory decision making, ensuring that patients' preferences, and values are integrated in disease management. From patient's perspective, QoL reflects what actually happens in patients' daily lives while from clinical perspective, QoL provides meaningful information to health professionals when planning care. Given that patients' priorities are under constant change, it is easily conceivable that QoL measurement needs measurement at different phases in disease trajectory.^{6,7,8} To support patient-centered decisions, we sought to compare their self reported outcomes as reflected in QoL before and after a therapeutic treatment.

The aim of the present study was to examine quality of life (QoL) in patients before and six months after coronary artery bypass grafting (CABG) as well as the associated factors.

Material and methods

Design, Setting, and Period of the Study

In the present study were enrolled 115 hospitalized patients at Ippokrateio General Hospital of Athens with diagnosis CHD, who had undergone CABG. Data was collected from October 2021 to September 2022. During this period, 115 patients were initially identified as eligible to participate in the study. At first measurement before CABG enrolled 115 patients and 105 after CABG because 4 passed away and 6 refused to participate. The present study was

cross-sectional and there was no intervention group. Participants were selected using the method of convenience sampling.

Inclusion and Exclusion Criteria of the Sample

Criteria for patients' inclusion in the study were as follows: i) age over 18 years, ii) diagnosis of CHD as assessed by a cardiologist and confirmed by medical records, iii) ability to write, read, and understand Greek language, and iv) ability to read and sign the informed consent form. The exclusion criteria were as follows, patients with : i) a history of mental illness; ii) visiting clinics to treat a co-existing disease and not CHD, and iii) cognitive disorders and sight or hearing problems.

Data Collection and Procedure

Collection of data was performed by the researcher using the method of interview to complete research instrument which was specially designed for the purposes of this study. The process of filling out the questionnaire lasted between 15 and 30 min and took place at the admission date (baseline) and 6 months after CABG.

Research instrument

Data were collected using the research instrument Short Form-36 Health Questionnaire (SF-36) including participants' characteristics which were the following:

Sociodemographic variables included gender, age, marital status, educational level, profession, residency, number of children, and age of children, discontinuation or retirement due to CHD, cohabitation and selfcare. Clinical variables included body mass index, smoking, comorbidities, number of grafted coronary vessels, family history of cardiac disease and prior hospitalization due to cardiac problem.

Measurement of quality of life (QoL)

Participants' QoL was measured by the SF-36 scale. One more question was added, which refers to the change in health and was not included in the construction of the scale. The SF-36 (Short Form-36 Health Survey) questionnaire is one of the most well-known psychometric tools, used in several countries for QoL self-assessment and comparison of health level in diverse population groups (either healthy or sick) and/or between different therapeutic methods of one category of patients. It includes 36 questions, which were collected, processed, and finally selected by the researchers of the Medical Outcomes Study (MOS) from a set of 149 questions, formed after evaluating

Table I. Distribution of the sample according to socio-demographic characteristics (n=115)

Parameter		n	%
Gender	Male	86	74,8
	Female	29	25,2
Age [years]	≤59	28	24,3
	60-69	49	42,6
	≥70	38	33,1
Marital status	Married	75	65,2
	Unmarried	18	15,7
	Seperated	12	10,4
	Widowed	10	8,7
Educational level	Primary	47	40,9
	Secondary	31	27,0
	Higher	24	20,9
	Postgraduate studies	13	11,3
Occupation	Public employee	26	22,6
	Private employee	26	22,6
	Freelancer	29	25,2
	Unemployeed/Household	34	29,6
Residency	Attica	69	60,0
	Capital	21	18,3
	Countryside	25	21,7
Number of children	None	39	33,9
	1	24	20,9
	2	33	28,7
	>2	19	16,5
Age of children	Up to 18 years old	15	19,7
	Over 18 years old	61	80,3
Discontinuation/retirement due to CHD	Yes	37	44,6
	No	46	55,4
Cohabitation	Husband	59	52,2
	Children	14	12,4
	Domestic helper/ other	13	11,5
	Alone	27	23,9
Practice of selfcare	Yes	84	73,0
	No	31	27,0

Table II. Distribution of the sample according to clinical characteristics (n=115)

Parameter		n	%
Body mass index	Normal weight:18.5–24.9 kg/m ²	27	23,5
	Overweight: 25–29.9 kg/m ²	66	57,4
	Obesity: BMI ≥ 30 kg/m ²	22	19,1
Smoking	Yes	57	49,6
	No	58	50,4
Comorbidities	Diabetes mellitus	58	50,4
	Arterial hypertension	109	94,8
	Dyslipidemia	76	66,1
	Angina	49	42,6
	Chronic Obstructive Pulmonary Disease-	2	1,7
Number of coronary vessels repaired with CABG	One	48	41,7
	Two	49	42,6
	Three	18	15,7
Family history of cardiac disease	Yes	82	71,3
	No	33	28,7
Prior hospitalization due to cardiac disease	Yes	41	35,7
	No	74	64,3

Table III. Comparison of SF-36 Dimensional Difference Rating Means Before and After CABG

SF-36	Total score before and six months after CABG and its difference					
	Before Surgery		After Surgery		Difference	
	n	$\bar{x} \pm SD$	n		$\bar{x} \pm SD$	p
Health changes	115	29,5±19,5	105	71,2±17,6	-41,7±22,6	<0,001
Physical functioning (PF)	115	54,1±25,2	105	78,7±13,2	-24,6±17,6	<0,001
Role–physical (RP)	115	41,0±28,8	105	65,0±23,2	-24,0±30,0	<0,001
Bodily pain (BP)	115	42,0±24,4	105	73,7±19,0	-31,6±15,7	<0,001
General health (GH)	115	44,3±23,5	105	63,5±19,1	-19,2±17,5	<0,001
Vitality/ energy (VT)	115	33,8±21,9	105	61,3±18,4	-27,5±19,2	<0,001
Social functioning (SF)	115	34,2±25,7	105	62,9±17,7	-28,7±21,5	<0,001
Role–emotional (RE)	115	47,3±30,9	105	66,0±27,7	-18,7±35,2	<0,001
Mental health (MH)	115	43,2±25,4	105	64,3±21,5	-21,1±23,6	<0,001

Table IV. Comparison of Mean SF-36 Dimensional Rating Scale Values Before and After CABG in Relation to Gender

SF-36		Gender				
		Male		Female		p
		n	$\bar{x} \pm SD$	n	$\bar{x} \pm SD$	
Health changes	Before	86	31,4±18,9	29	21,6±20,8	0,020
	After	79	73,1±17,3	26	65,4±17,4	0,052
Physical functioning (PF)	Before	86	55,1±24,9	29	45,3±24,5	0,070
	After	79	80,1±13,1	26	74,4±12,8	0,058
Role-physical (RP)	Before	86	40,4±29,0	29	41,4±25,2	0,872
	After	79	66,1±22,3	26	61,5±25,7	0,382
Bodily pain (BP)	Before	86	45,3±24,1	29	32,3±21,5	0,011
	After	79	77,4±17,5	26	62,3±19,0	<0,001
General health (GH)	Before	86	45,5±22,0	29	35,5±26,7	0,048
	After	79	67,8±18,0	26	50,4±16,6	<0,001
Vitality/ energy (VT)	Before	86	34,3±21,2	29	28,6±21,3	0,215
	After	79	65,0±17,8	26	50,2±15,8	<0,001
Social functioning (SF)	Before	86	34,6±25,2	29	31,0±24,5	0,509
	After	79	65,8±17,3	26	53,8±16,1	0,002
Role-emotional (RE)	Before	86	46,5±31,6	29	43,7±28,3	0,670
	After	79	67,5±27,2	26	61,5±29,4	0,343
Mental health (MH)	Before	86	43,4±24,6	29	37,0±26,3	0,234
	After	79	68,3±21,0	26	52,0±18,5	0,001

various measurement tools used in the last 20 years which assess QoL.^{9,10}

The 36 questions of the SF-36 are categorized into eight thematic subscales (dimensions of health), consisting of 2-10 questions each and representing the most frequently measured dimensions of health. The answers to the questions are evaluated on a Likert scale from 1 to 5. Specifically, the eight measurement subscales of the SF-36 are:

1. Physical Functioning: Determines whether the level of health limits physical activities such as walking, climbing stairs, lifting weights, etc. with 10 questions,
2. Role Physical: Determines the positive or negative influence of the level of physical health on work and daily activities. with 4 questions,
3. Bodily Pain: Determines the intensity of the pain and its effect on activities inside and outside the home. with 2 questions,
4. General Health: Determines the prospect of maintaining a high level of health and the ability to resist dis-

ease. with 5 questions,

5. Vitality: Determines the feeling of tiredness or energy. with 4 questions,

6. Social Functioning: Determines the degree to which social activities are affected by emotional health and emotional problems. with 2 questions,

7. Role Emotional: Determines the degree to which work and other daily activities are affected by emotional problems. with 3 questions and

8. Mental Health: Identifies general mental health including depression, anxiety and behavioral control of emotions. with 5 questions.

The SF-36 has been translated into Greek and statistical tests of validity and reliability had successful results, both in a small convenience sample and a representative sample of the Greek urban population.¹¹

The scores assigned to the questions were summed up separately for the questions that evaluated each of the eight dimensions of health. Higher scores indicate a better QoL.

Table V. Comparison of Mean SF-36 Dimensional Rating Scale Values Before and After CABG in Relation to Age

SF-36		Age						
		Up to 59 old		60-69		70+		P
		n	$\bar{x} \pm SD$	N	$\bar{x} \pm SD$	n	$\bar{x} \pm SD$	
Health changes	Before	28	34,8±18,4	49	28,1±19,5	38	25,7±20,5	0,164
	After	26	77,9±16,3	44	71,0±16,1	35	66,4±19,1	0,041
Physical functioning (PF)	Before	28	68,6±16,7	49	53,7±26,5	38	39,5±21,1	<0,001
	After	26	86,9±8,7	44	80,1±11,5	35	70,7±13,7	<0,001
Role-physical (RP)	Before	28	54,5±24,6	49	37,2±26,1	38	34,9±29,9	0,009
	After	26	75,0±15,8	44	63,1±22,5	35	60,0±26,6	0,032
Bodily pain (BP)	Before	28	49,8±23,4	49	44,6±24,5	38	33,0±21,6	0,011
	After	26	79,6±13,3	44	73,5±19,9	35	69,5±17,6	0,120
General health (GH)	Before	28	50,7±24,7	49	39,5±22,3	38	41,8±23,6	0,124
	After	26	71,3±19,4	44	63,2±17,3	35	58,1±19,7	0,027
Vitality/ energy (VT)	Before	28	43,4±26,8	49	29,7±19,0	38	29,2±17,1	0,010
	After	26	70,6±16,5	44	61,1±18,2	35	54,7±17,5	0,003
Social functioning (SF)	Before	28	45,1±27,1	49	33,2±23,3	38	26,0±22,8	0,008
	After	26	69,7±20,7	44	63,9±16,0	35	56,4±15,6	0,012
Role-emotional (RE)	Before	28	47,6±36,8	49	41,5±30,1	38	50,0±26,6	0,417
	After	26	67,9±27,5	44	65,9±27,4	35	64,8±29,1	0,907
Mental health (MH)	Before	28	51,0±26,5	49	35,0±22,3	38	43,7±25,6	0,021
	After	26	72,3±22,0	44	62,9±19,6	35	60,0±22,5	0,074

Ethical considerations

Written, informed consent for participation was obtained from all patients after providing elaborate explanation for the purpose and procedure of the study. Participation in the study was on a voluntary basis, and anonymity was preserved. Furthermore, all participants were informed of their right to refuse or to discontinue their participation, according to the ethical standards of the Helsinki Declaration of 1983. The study was approved by the Medical Research Ethics Committee of the hospital (SC:55⁰/22-06-2021).

Statistical analysis

The normality of continuous variables was tested with the Kolmogorov-Smirnov test. Categorical data are presented with absolute and relative (%) frequencies. For the quantitative variables, the statistical test t-test and anova was used depending on the variables. A significance level of 5% was considered statistically significant. All statistical analyses were performed with the statistical package SPSS version 25.

Results

Descriptive results

From the 115 participants who underwent CABG, 74,8%, were men. The majority of participants were 60-69 years old (42,6%), married (65,2%), graduates from primary education (40,9%), unemployed or engaged in domestic work (29,6%), lived in wider region of Attica (60%), had more than one children (45,2%), lived with husband (52,2%) and practiced self care (77%). (Table I)

With respect to body mass index of the sample, 23,5% had a normal weight, 57,4% were overweight and 19,1% were obese. Moreover, 71,3% reported a family history of cardiac disease, 35,7% had a prior hospitalization due to cardiac problem, 95,7% reported suffering from other disease, and the majority had two vessels repaired. (Table II)

Statistical results

From the paired t-test, statistically significant differences were found regarding the total QoL score before and 6 months after CABG with improvement in all dimensions,

Table VI. Comparison of Mean SF-36 Dimensional Rating Scale Values Before and After CABG in Relation to Body Mass Index

SF-36		Body mass index						
		Normal weight		Overweight		Obesity		p
		n	$\bar{x}\pm SD$	n	$\bar{x}\pm SD$	n	$\bar{x}\pm SD$	
Health changes	Before	27	25,9±20,2	66	30,7±20,0	22	27,3±18,8	0,527
	After	23	68,5±17,2	61	73,0±16,6	21	69,0±20,8	0,485
Physical functioning (PF)	Before	27	46,9±20,8	66	56,0±25,0	22	49,5±29,0	0,229
	After	23	75,2±15,0	61	79,8±12,4	21	79,3±13,2	0,365
Role-physical (RP)	Before	27	38,0±28,1	66	45,1±28,5	22	30,7±24,3	0,095
	After	23	70,7±20,9	61	64,8±24,3	21	59,5±21,6	0,282
Bodily pain (BP)	Before	27	38,3±25,7	66	46,6±23,1	22	32,8±22,2	0,042
	After	23	73,6±20,6	61	76,0±18,7	21	67,1±17,3	0,185
General health (GH)	Before	27	40,6±23,8	66	44,8±23,6	22	40,5±23,7	0,625
	After	23	61,7±21,0	61	65,7±18,1	21	59,3±20,0	0,374
Vitality/ energy (VT)	Before	27	27,6±19,5	66	35,5±21,9	22	31,6±20,9	0,259
	After	23	59,3±22,6	61	64,2±15,6	21	55,2±20,1	0,133
Social functioning (SF)	Before	27	28,2±24,2	66	38,4±25,8	22	26,1±20,7	0,057
	After	23	61,4±19,6	61	64,1±16,2	21	60,7±20,3	0,681
Role-emotional (RE)	Before	27	40,7±31,1	66	47,0±30,4	22	48,5±32,1	0,612
	After	23	71,0±20,6	61	64,5±27,1	21	65,1±35,7	0,624
Mental health (MH)	Before	27	35,6±22,6	66	44,3±26,2	22	41,8±24,3	0,315
	After	23	60,0±22,3	61	68,3±19,3	21	57,3±25,0	0,073

p<0.001. (Table III)

From the statistical test t-test and anova, there was a statistically significant difference in the dimension of health change between men and women before and after CABG, p=0.020 and p=0.052 with women having a lower overall score. Also, a statistically significant difference was found between men and women in the dimension of bodily pain before and after CABG, where women also had a more negative score, p=0.011 and p<0.001, respectively. Furthermore, a statistically significant difference before and after CABG was found in the general health dimension where women rated more negatively, p=0.048 and p<0.001, respectively. Moreover, after CABG women rated more negatively the dimension of vitality, p<0.001, of social functioning, p=0.002 and the dimension of mental health, p=0.001. (Table IV)

In relation to age participants over 70 years of age rated more negatively health change dimension after CABG, p=0.041. Likewise, the same age rated more negatively before and after CABG the dimension of physical function-

ing, p<0.001 and p<0.001, of physical role, p=0.009 and p=0.032, of vitality, p=0.010 and p=0.003, and of social functioning, p=0.008 and p=0.012, respectively. Similarly, the same age group before CABG rated more negatively the dimension of bodily pain, p=0.011, and of mental health, p=0.021 while after CABG rated more negatively the dimension of general health, p=0.027. (Table V)

No statistically significant differences were found in relation to the body mass index in any dimension except bodily pain where the obese patients rated more negatively before CABG, p=0.042. (Table VI)

Statistically significant differences were found in relation to marital status in the general health dimension before and after CABG, where single, divorced, and widowed participants rated more negatively, p=0.006 and p=0.001, respectively. Likewise, before and after CABG, the same group rated more negatively the dimension of mental health p=0.003 and p=0.013, respectively while only before CABG, the vitality dimension, p=0.034. (Table VII)

As for educational level, before and after CABG graduates

Table VII. Comparison of Mean SF-36 Dimensional Rating Scores Before and After CABG in Relation to Marital Status

SF-36		Marital status				
		Married		Unmarried/Separated/Widowes		P
		n	$\bar{x} \pm SD$	n	$\bar{x} \pm SD$	
Health changes	Before	75	30,7±20,0	40	25,6±19,2	0,194
	After	70	72,1±17,8	35	69,3±17,2	0,436
Physical functioning (PF)	Before	75	52,4±25,0	40	53,0±25,4	0,903
	After	70	78,6±12,5	35	78,9±14,6	0,917
Role-physical (RP)	Before	75	40,3±29,6	40	41,3±25,0	0,868
	After	70	64,3±23,9	35	66,4±21,8	0,657
Bodily pain (BP)	Before	75	42,6±23,8	40	41,0±24,7	0,735
	After	70	74,5±18,2	35	72,1±20,7	0,557
General health (GH)	Before	75	47,3±21,4	40	34,9±25,5	0,006
	After	70	67,9±16,0	35	54,9±22,0	0,001
Vitality/ energy (VT)	Before	75	35,9±21,0	40	27,1±20,8	0,034
	After	70	63,6±15,4	35	56,7±22,8	0,111
Social functioning (SF)	Before	75	35,5±26,2	40	30,3±22,4	0,290
	After	70	64,1±17,1	35	60,4±18,8	0,309
Role-emotional (RE)	Before	75	48,9±31,6	40	40,0±28,4	0,140
	After	70	67,1±28,1	35	63,8±27,3	0,564
Mental health (MH)	Before	75	46,8±24,4	40	32,4±24,0	0,003
	After	70	68,3±18,8	35	56,2±24,5	0,013

of primary education rated more negatively the dimension of physical functioning, $p=0.011$ and $p=0.047$, and of bodily pain, $p=0.001$ and $p=0.001$, respectively.

Before CABG, graduates of primary education rated more negatively the dimension of vitality, $p=0.012$ while after CABG the same group rated more negatively the dimension of mental health, $p=0.025$ and general health, $p=0.002$. Moreover, before CABG, graduates of secondary education rated more negatively the dimension of physical role, $p=0.008$ and of social functioning, $p<0.001$. (Table VII)

In relation to the profession, after CABG, the unemployed and those engaged in housework rated more negatively health change, $p=0.016$. After CABG, the same group rated more negatively the dimension of bodily pain, $p<0.001$ of social functioning, $p=0.001$ and of emotional role, $p=0.023$. Before and after CABG, the same group rated more negatively the dimension of general health, $p=0.027$ and $p<0.001$, of vitality, $p=0.004$ and $p<0.001$, and of mental health, $p=0.009$ and $p=0.003$, respectively. (Table IX)

In terms of residence, before CABG participants living in countryside rated more negatively health change, $p=0.012$, the dimension of physical functioning, $p=0.020$, and of general health, $p=0.020$. (Table X)

No statistically significant differences were found in any dimension in relation to having children, $p>0.05$. On the contrary, in relation to children's age, those with children older than 18 years rated more negatively before and after CABG, the dimension of health change $p=0.046$ and $p=0.050$, of physical functioning, $p=0.007$ and $p=0.029$, of bodily pain, $p=0.020$ and $p=0.032$, of vitality, $p=0.010$ and $p=0.037$, and of social functioning, $p=0.004$ and $p=0.037$, respectively. The same group rated more negatively the dimension of physical role only before CABG, $p=0.015$.

Regarding positive family history of cardiac disease, a statistically significant difference was found only in the dimension of general health before CABG where participants with a positive family history rated more negatively, $p=0.028$.

In terms of prior hospitalization due to cardiac problem,

Table VIII. Comparison of Mean SF-36 Dimensional Rating Scale Values Before and After CABG in Relation to Educational Level

SF-36		Educational Level						
		Primary		Secondary		Higher		p
		n	$\bar{x}\pm SD$	n	$\bar{x}\pm SD$	n	$\bar{x}\pm SD$	
Health changes	Before	47	26,1±21,5	31	29,8±18,7	37	31,8±18,3	0,408
	After	39	66,7±15,5	29	70,7±19,0	37	76,4±17,6	0,054
Physical functioning (PF)	Before	47	46,8±22,9	31	49,5±25,0	37	62,6±25,2	0,011
	After	39	75,0±14,0	29	78,8±11,6	37	82,4±12,7	0,047
Role-physical (RP)	Before	47	36,7±26,0	31	33,1±27,7	37	52,0±27,9	0,008
	After	39	65,4±23,4	29	64,7±18,3	37	64,9±26,7	0,991
Bodily pain (BP)	Before	47	34,1±22,2	31	40,0±24,0	37	53,9±22,1	0,001
	After	39	65,6±16,2	29	74,4±18,7	37	81,7±18,8	0,001
General health (GH)	Before	47	39,7±23,3	31	39,8±25,4	37	49,9±21,5	0,098
	After	39	56,0±17,0	29	63,8±19,4	37	71,2±17,3	0,002
Vitality/ energy (VT)	Before	47	27,1±17,6	31	32,1±22,4	37	40,8±22,6	0,012
	After	39	56,4±19,1	29	61,9±16,5	37	66,1±18,3	0,070
Social functioning (SF)	Before	47	28,7±21,9	31	25,8±22,8	37	46,6±25,8	<0,001
	After	39	58,3±15,8	29	62,9±16,9	37	67,6±19,4	0,075
Role-emotional (RE)	Before	47	46,8±30,8	31	39,8±32,7	37	49,5±29,0	0,412
	After	39	60,7±29,5	29	69,0±28,1	37	69,4±25,3	0,318
Mental health (MH)	Before	47	37,2±25,7	31	39,5±23,5	37	49,5±24,3	0,068
	After	39	57,6±21,0	29	64,7±19,5	37	70,9±21,9	0,025

those who had been hospitalized before CABG rated more negatively the dimension of health change, $p=0.004$. The same group before and after CABG rated more negatively the dimension of physical functioning, $p=0.006$ and $p=0.001$, of physical role, $p=0.027$ and $p<0.001$, of bodily pain, $p=0.018$ and $p=0.020$, of general health, $p=0.001$ and $p=0.001$, and of social functioning, $p=0.045$ and $p=0.041$, respectively. (Table XI)

Table XII shows the statistically significant differences in the dimensions of the SF-36 scale in relation to the presence of diabetes mellitus. Table XIII in relation to the existence of arterial hypertension, table XIV in relation to the existence of dyslipidemia, table XV in relation to the existence of angina pectoris, and in table XVI in relation to interruption of work due to cardiac problems.

In relation to cohabitation, participants who lived with a domestic helper rated more negatively the health change before and after CABG, $p<0.001$ and $p=0.019$, respectively. Also the same group, before and after CABG rated more negatively the dimension of physical functioning, $p=0.001$ and $p<0.001$, of bodily pain, $p=0.006$ and $p=0.007$, of gen-

eral health, $p=0.001$ and $p<0.001$, of vitality, $p=0.049$ and $p<0.001$ and of mental health, $p=0.012$ and $p<0.001$, respectively. The same group, after CABG, rated more negatively the dimension of physical role, $p=0.015$, and of social functioning, $p=0.030$. (Table XVII)

Individuals who practiced selfcare reported more positively QoL with a statistically significant difference before and after CABG the health change, $p<0.001$ and $p=0.001$, the dimension of physical functioning, $p<0.001$ and $p<0.001$, of physical role, $p<0.001$ and $p<0.001$, of bodily pain, $p<0.001$ and $p<0.001$, of general health, $p<0.001$ and $p=0.014$, of vitality, $p=0.003$ and $p<0.001$ and of social functioning, $p<0.001$ and $p=0.001$, respectively. No statistically significant differences were found regarding the dimension of emotional role and mental health, $p>0.05$. (Table XVIII)

Regarding number of vessels repaired, before and after CABG, participants who underwent triple CABG,

rated more negatively the dimension of physical functioning, $p<0.001$ and $p=0.001$, of physical role, $p=0.001$ and $p=0.024$, of bodily pain, $p<0.001$ and $p=0.014$, of vi-

Table IX. Comparison of Mean SF-36 Dimensional Rating Values Before and After CABG in Relation to Occupation

SF-36		Occupation												P
		Unemployed		Public employee		Private employee		Freelancer		Household				
		n	$\bar{x} \pm SD$	n	$\bar{x} \pm SD$	n	$\bar{x} \pm SD$	n	$\bar{x} \pm SD$	n	$\bar{x} \pm SD$			
Health changes	Before	12	29,2±17,9	26	32,7±17,0	26	29,8±20,0	29	31,0±20,8	22	20,5±21,3	0,252		
	After	11	72,7±17,5	24	74,0±18,8	26	77,9±16,3	25	69,0±14,9	19	60,5±17,3	0,016		
Physical functioning (PF)	Before	12	57,9±20,6	26	57,9±26,5	26	52,7±23,8	29	54,5±27,2	22	40,9±21,9	0,153		
	After	11	80,5±13,9	24	80,2±13,9	26	80,2±10,6	25	81,2±14,5	19	70,3±11,0	0,046		
Role-physical (RP)	Before	12	43,8±28,5	26	46,2±30,6	26	30,8±25,8	29	42,2±30,0	22	42,0±23,6	0,341		
	After	11	68,2±19,7	24	65,6±26,4	26	63,5±19,0	25	70,0±22,8	19	57,9±26,4	0,517		
Bodily pain (BP)	Before	12	46,3±25,8	26	47,1±25,1	26	44,8±24,3	29	44,4±22,3	22	27,4±19,6	0,032		
	After	11	74,1±20,4	24	80,6±18,3	26	74,5±16,7	25	78,4±16,8	19	57,4±16,9	<0,001		
General health (GH)	Before	12	31,3±20,0	26	50,6±22,2	26	47,3±23,9	29	44,8±20,6	22	32,9±26,2	0,027		
	After	11	55,5±21,5	24	73,5±19,5	26	69,6±13,5	25	64,0±15,5	19	46,6±16,4	<0,001		
Vitality/ energy (VT)	Before	12	19,2±10,8	26	42,3±20,4	26	35,4±23,4	29	34,7±21,3	22	23,9±18,2	0,004		
	After	11	61,8±20,8	24	67,9±18,5	26	64,4±15,9	25	64,2±16,5	19	44,7±13,8	<0,001		
Social functioning (SF)	Before	12	30,2±18,8	26	42,3±24,5	26	28,8±23,4	29	37,1±28,0	22	26,7±24,2	0,159		
	After	11	56,8±14,1	24	66,7±20,4	26	65,9±16,8	25	69,0±16,2	19	49,3±11,4	0,001		
Role-emotional (RE)	Before	12	33,3±40,2	26	53,8±25,1	26	41,0±31,7	29	49,4±31,6	22	43,9±28,0	0,304		
	After	11	51,5±27,3	24	72,2±25,4	26	76,9±20,6	25	62,7±30,9	19	56,1±29,5	0,023		
Mental health (MH)	Before	12	25,0±18,1	26	49,5±22,4	26	44,9±26,0	29	46,8±24,6	22	31,4±25,4	0,009		
	After	11	58,9±25,9	24	70,5±20,6	26	68,8±18,1	25	68,2±20,5	19	48,2±18,3	0,003		

Table X. Comparison of Mean SF-36 Dimensional Rating Scale Values Before and After CABG in Relation to Residence

SF-36		Residence						
		Attica		Capital		Countryside		P
		n	$\bar{x}\pm SD$	n	$\bar{x}\pm SD$	n	$\bar{x}\pm SD$	
Health changes	Before	69	32,6±18,8	21	28,6±18,2	25	19,0±20,8	0,012
	After	66	73,5±18,0	20	67,5±18,3	19	67,1±14,6	0,222
Physical functioning (PF)	Before	69	55,5±25,5	21	57,6±21,1	25	40,4±23,5	0,020
	After	66	80,0±12,3	20	78,5±13,0	19	74,2±15,8	0,242
Role-physical (RP)	Before	69	43,1±30,6	21	42,9±26,4	25	32,0±19,8	0,219
	After	66	65,2±24,0	20	66,3±21,9	19	63,2±22,6	0,915
Bodily pain (BP)	Before	69	44,6±24,2	21	44,6±25,2	25	32,9±20,9	0,098
	After	66	75,3±18,7	20	74,6±22,6	19	67,1±15,1	0,248
General health (GH)	Before	69	47,4±22,1	21	41,4±25,6	25	32,2±23,0	0,020
	After	66	66,1±19,5	20	62,0±19,1	19	56,1±16,5	0,119
Vitality/ energy (VT)	Before	69	35,9±21,0	21	30,5±22,2	25	26,6±20,4	0,149
	After	66	63,4±17,9	20	60,8±19,6	19	54,7±18,2	0,193
Social functioning (SF)	Before	69	35,5±26,0	21	35,7±23,5	25	27,0±22,7	0,319
	After	66	64,0±18,4	20	61,9±16,5	19	59,9±17,0	0,647
Role-emotional (RE)	Before	69	46,9±31,5	21	41,3±31,5	25	46,7±28,9	0,760
	After	66	67,7±29,8	20	61,7±24,8	19	64,9±23,5	0,688
Mental health (MH)	Before	69	44,1±24,1	21	39,6±26,1	25	37,3±27,3	0,470
	After	66	66,2±21,2	20	59,2±18,2	19	62,9±25,5	0,430

tality, $p=0.041$ and $p=0.049$ while only before CABG the dimension of social functioning, $p=0.002$. (Table XIX)

No significant statistical differences were found in relation to smoking before and after CABG.

Discussion

In the present study, the majority were men (74,8%) which is attributed to the already acquired knowledge that men is more likely to have a heart attack. The ATTIKI study showed 11% and 6.1% incidence of cardiovascular disease for men and women, respectively from 2001 to 2006.¹²

In terms of gender, women reported more negatively the dimensions of health change, bodily pain, general health, vitality, mental health, and social functioning, both before and after CABG. One proposed explanation for the present finding regarding women is their role in family, involving activities that require physical and mental strength, such as dealing with household, taking care of the children, etc.. Another possible contributor to lower general health and social functioning is poor prognosis of CHD in women. Notably, women tend to be more active in self-care activ-

ities, in searching for information and in adapting to disease. These findings are in line with relevant studies^{12,13,14} as well as with the study conducted by Prata et al.,¹⁵ who demonstrated more negatively QoL among women in all dimensions of SF-36 scale. This information, however, contradicts other published data showing no significant association between QoL and gender with men to report more negatively only the dimension of bodily pain.¹⁶

Results also showed that participants over 70 years assessed negatively all QoL dimensions before CABG compared to other age groups. Indeed, as age is advancing the overall QoL is decreasing due to co-morbidities, reduced physical activity, loss of energy and fatigue. However, their QoL improved 6 months after CABG. Similar observation was made by Peric et al.,¹⁷ showing low QoL before CABG which improved 6 months after, as measured by Nottingham Health Profile scale. Consistent with this finding, Bak et al.,¹⁸ in a sample of 65 elderly patients before surgery, 6 months, and 1 year later showed they had poor QoL before CABG which was improved afterwards.

Regarding the body mass index, a statistically significant

Table XI. Comparison of Mean SF-36 Dimensional Rating Scores Before and After CABG in Relation to Prior Cardiac Hospitalization

SF-36		Prior Cardiac Hospitalization				
		Yes		No		p
		n	$\bar{x}\pm SD$	n	$\bar{x}\pm SD$	
Health changes	Before	41	22,0±20,3	74	32,8±18,5	0,004
	After	36	69,4±19,0	69	72,1±16,9	0,466
Physical functioning (PF)	Before	41	44,1±26,0	74	57,3±23,4	0,006
	After	36	72,8±14,7	69	81,7±11,3	0,001
Role-physical (RP)	Before	41	32,9±25,9	74	44,9±28,4	0,027
	After	36	54,2±22,5	69	70,7±21,4	<0,001
Bodily pain (BP)	Before	41	34,9±22,4	74	46,0±24,1	0,018
	After	36	67,8±17,8	69	76,8±19,0	0,020
General health (GH)	Before	41	32,9±23,5	74	48,6±21,9	0,001
	After	36	54,9±16,5	69	68,0±18,9	0,001
Vitality/ energy (VT)	Before	41	29,6±19,7	74	34,7±22,0	0,226
	After	36	56,5±20,6	69	63,8±16,8	0,053
Social functioning (SF)	Before	41	27,4±22,6	74	37,2±25,7	0,045
	After	36	58,0±15,9	69	65,4±18,2	0,041
Role-emotional (RE)	Before	41	48,8±31,7	74	44,1±30,3	0,441
	After	36	63,0±27,3	69	67,6±28,0	0,415
Mental health (MH)	Before	41	38,7±25,1	74	43,5±25,1	0,335
	After	36	59,8±22,2	69	66,6±20,9	0,123

Table XII. Comparison of SF-36 Dimensional Rating Means Before and After CABG in Relation to Comorbidity of Diabetes Mellitus

SF-36		Comorbidity of Diabetes Mellitus				
		Yes		No		p
		n	$\bar{x}\pm SD$	n	$\bar{x}\pm SD$	
Health changes	Before	57	21,9±18,9	58	35,8±18,2	<0,001
	After	51	64,7±17,4	54	77,3±15,6	<0,001
Physical functioning (PF)	Before	57	42,8±25,0	58	62,2±21,1	<0,001
	After	51	73,0±13,5	54	84,0±10,4	<0,001
Role-physical (RP)	Before	57	34,2±25,3	58	47,0±29,3	0,014
	After	51	53,4±20,0	54	75,9±20,6	<0,001
Bodily pain (BP)	Before	57	31,5±19,9	58	52,4±23,4	<0,001
	After	51	67,0±17,6	54	80,0±18,2	<0,001
General health (GH)	Before	57	36,4±23,3	58	49,5±22,2	0,003
	After	51	55,4±16,5	54	71,2±18,4	<0,001
Vitality/ energy (VT)	Before	57	28,9±19,4	58	36,7±22,5	0,049
	After	51	54,3±17,6	54	68,0±16,7	<0,001
Social functioning (SF)	Before	57	27,4±23,2	58	39,9±25,3	0,007
	After	51	56,6±16,1	54	68,8±17,3	<0,001
Role-emotional (RE)	Before	57	52,0±30,2	58	39,7±30,2	0,030
	After	51	68,0±28,3	54	64,2±27,4	0,488
Mental health (MH)	Before	57	41,0±25,2	58	42,6±25,2	0,739
	After	51	60,5±21,3	54	67,8±21,3	0,085

Table XIII. Comparison of Mean SF-36 Dimensional Rating Scores Before and After CABG in Relation to Comorbidity of Hypertension

SF-36		Comorbidity of Hypertension				
		Yes		No		p
		n	$\bar{x} \pm SD$	n	$\bar{x} \pm SD$	
Health changes	Before	109	28,2±19,9	6	41,7±12,9	0,105
	After	100	71,0±17,7	5	75,0±17,7	0,622
Physical functioning (PF)	Before	109	51,4±25,0	6	75,0±10,5	0,001
	After	100	78,2±13,3	5	88,0±5,7	0,105
Role-physical (RP)	Before	109	40,1±28,3	6	50,0±22,4	0,404
	After	100	64,8±23,1	5	70,0±27,4	0,623
Bodily pain (BP)	Before	109	40,8±23,4	6	64,6±27,0	0,018
	After	100	73,3±18,6	5	82,0±26,2	0,318
General health (GH)	Before	109	41,9±23,1	6	62,5±25,0	0,037
	After	100	63,2±18,8	5	70,0±26,0	0,441
Vitality/ energy (VT)	Before	109	32,2±20,6	6	45,8±30,4	0,126
	After	100	61,3±18,1	5	62,0±27,1	0,934
Social functioning (SF)	Before	109	33,0±24,6	6	45,8±30,3	0,223
	After	100	62,4±17,3	5	72,5±25,6	0,214
Role-emotional (RE)	Before	109	46,8±30,5	6	27,8±32,8	0,141
	After	100	66,0±28,0	5	66,7±23,6	0,958
Mental health (MH)	Before	109	41,4±25,1	6	48,0±27,2	0,535
	After	100	64,4±21,2	5	62,4±29,7	0,843

difference was found only among the group of obese regarding the dimension of bodily pain before CABG, where they scored more negatively. Järvinen et al.,¹⁹ showed QoL improvement to obese and non-obese participants, 12 months after CABG, as measured by RAND-36 scale while Pačarić et al.,²⁰ reported that body mass index was not a factor that predicts poor QoL. However, the negative role of obesity on health is well known, involving short and long term consequences such as orthopedic, respiratory, cardiovascular, or psychological problems.²¹

Statistic analysis of data revealed that single, divorced, and widowed participants assessed more negatively general health, vitality, and mental health compared to the married ones. The role of spousal support in CABG is pivotal since it reduces mortality and improves psychosocial recovery after surgery.²⁰ Contrariwise, subjective and objective social isolation increases the risk of mortality comparably to well-established risk factors.²² Partners help patients with cardiac disease to manage with comorbidities and enforce them to adopt a healthier lifestyle and/or

participate in rehabilitation program.^{23,24}

Also, participants with children older than 18 years reported more negatively before and after CABG in the dimensions of health change, physical functionality, bodily pain, vitality, social functionality. The most plausible explanation is that patients fail to receive adequate support since children of that age live separately from family.

In terms of current educational status, patients with lower education reported more negatively before and after CABG in physical functionality, physical role, bodily pain, vitality and mental health. Similar observation was made by relevant studies.^{25,26} Higher education level maximizes comprehension of health issues and empowers seek for more medical aid. Contrariwise, low education indicates limited awareness of adopting a healthy lifestyle and secondary prevention measures.²⁷

Concerning occupation, it was found that before and after CABG, unemployed and domestic workers scored negatively in dimensions of bodily pain, general health, vitality, and mental health. The unemployed and those engaged

Table XIV. Comparison of SF-36 Dimension Rating Means before and after CABG in relation to Comorbidity of Dyslipidemia

SF-36		Comorbidity of Dyslipidemia				
		Yes		No		p
		n	$\bar{x} \pm SD$	n	$\bar{x} \pm SD$	
Health changes	Before	76	26,0±19,8	39	34,6±18,7	0,026
	After	68	67,6±17,3	37	77,7±16,4	0,005
Physical functioning (PF)	Before	76	46,7±25,9	39	64,1±18,6	<0,001
	After	68	76,1±13,4	37	83,4±11,5	0,006
Role-physical (RP)	Before	76	35,9±27,8	39	50,0±26,3	0,010
	After	68	58,8±21,9	37	76,4±21,2	<0,001
Bodily pain (BP)	Before	76	34,9±21,1	39	55,9±23,5	<0,001
	After	68	70,5±18,1	37	79,5±19,5	0,019
General health (GH)	Before	76	40,1±22,6	39	48,7±24,6	0,062
	After	68	59,8±18,3	37	70,4±19,1	0,006
Vitality/ energy (VT)	Before	76	30,5±18,4	39	37,6±25,6	0,129
	After	68	57,9±18,0	37	67,6±17,6	0,010
Social functioning (SF)	Before	76	29,4±23,5	39	42,0±25,9	0,010
	After	68	59,4±16,6	37	69,3±18,1	0,006
Role-emotional (RE)	Before	76	49,6±29,1	39	38,5±32,9	0,067
	After	68	64,7±29,3	37	68,5±24,8	0,509
Mental health (MH)	Before	76	41,5±25,0	39	42,3±25,6	0,883
	After	68	61,0±20,5	37	70,3±22,2	0,034

in domestic work may, due to low income, may encounter with more difficulties to fulfill their potential needs and other disease related demands. These findings are in line with Bakhsh et al.,²⁸ showing that participants of enough income and a higher educational level presented a better QoL, while other variables such as age and gender were not significant QoL determinants. Verwijmeren et al.,²³ illustrated that female sex, older age, and socioeconomic status are associated with worse QoL after CABG. An alternative suggestions which partially explains poor QoL is that low socioeconomic status is associated with higher levels of stress hormones such as cortisol and norepinephrine.²⁹

In terms of residence, participants living in countryside rated more negatively the dimensions of health change, physical functioning and general health, before CABG. Patients living in rural areas encounter with several factors that may hamper their health, such as health care deficiencies or failure of early access to optimal healthcare, reluctance to report increased stress for fear of stigmatization.³⁰

Participants with a positive family cardiac history scored

negatively in the general health dimension only before CABG. Also, individuals with prior hospitalization due to a cardiac problem assessed negatively on dimensions of QoL before and after CABG. It is important to mention that participants suffering from other disease assess vitality more negatively.³¹⁻³³ Pulimala et al.,³⁴ found that more comorbidities affected QoL improvement. In addition, Abdallah et al.,³⁵ showed that hypertension, dyslipidemia, and smoking were independent predictors of worse QoL while Sajobi et al.,³⁶ reported that major risk factors, including diabetes mellitus, hypertension, and smoking, were QoL predictors. Finally, Bakhsh et al.,²⁸ acknowledged comorbidities as important QoL determinants.

The present result that smoking was not associated with QoL before and after CABG, is in line with Pačarić et al.,²⁰ who reported that smoking and comorbidities such as hyperlipidemia, hypertension, diabetes, were not predictors for poor QoL.

The finding that participants living with someone providing help in domestics assessed negatively all QoL di-

Table XV. Comparison of Mean SF-36 Dimensional Rating Scores Before and After CABG in Relation to Comorbidity of Angina

SF-36		Comorbidity of Angina				
		Yes		No		p
		n	$\bar{x}\pm SD$	n	$\bar{x}\pm SD$	
Health changes	Before	49	20,9±19,3	66	34,8±18,1	<0,001
	After	43	65,1±17,4	62	75,4±16,6	0,003
Physical functioning (PF)	Before	49	41,5±25,4	66	60,8±21,5	<0,001
	After	43	72,3±13,1	62	83,1±10,6	<0,001
Role-physical (RP)	Before	49	33,2±25,7	66	46,2±28,5	0,013
	After	43	52,9±20,6	62	73,4±21,2	<0,001
Bodily pain (BP)	Before	49	31,0±19,0	66	50,3±24,2	<0,001
	After	43	65,3±16,2	62	79,5±18,4	<0,001
General health (GH)	Before	49	35,3±23,5	66	48,7±22,1	0,002
	After	43	55,5±16,8	62	69,1±18,8	<0,001
Vitality/ energy (VT)	Before	49	28,4±19,2	66	36,2±22,2	0,050
	After	43	55,0±18,1	62	65,7±17,4	0,003
Social functioning (SF)	Before	49	26,3±22,7	66	39,2±25,3	0,005
	After	43	55,5±15,3	62	67,9±17,6	<0,001
Role-emotional (RE)	Before	49	52,4±28,9	66	40,9±31,1	0,047
	After	43	69,8±26,0	62	63,4±24,8	0,252
Mental health (MH)	Before	49	41,1±25,2	66	42,3±25,2	0,794
	After	43	61,8±22,2	62	66,0±21,0	0,324

Table XVI. Comparison of Mean SF-36 Dimensional Rating Scale Values Before and After CABG in Relation to Discontinuation of Work Due to Disease

SF-36		Discontinuation of Work Due to Disease				
		Yes		No		p
		n	$\bar{x}\pm SD$	n	$\bar{x}\pm SD$	
Health changes	Before	37	25,7±20,0	46	34,2±18,5	0,047
	After	33	67,4±15,9	44	77,8±16,4	0,007
Physical functioning (PF)	Before	37	39,9±22,6	46	65,7±22,7	<0,001
	After	33	73,2±14,2	44	85,3±9,1	<0,001
Role-physical (RP)	Before	37	31,8±29,8	46	45,1±27,7	0,038
	After	33	60,6±24,2	44	69,9±20,6	0,074
Bodily pain (BP)	Before	37	35,4±21,8	46	53,3±21,7	<0,001
	After	33	72,1±16,9	44	81,5±16,3	0,016
General health (GH)	Before	37	43,5±22,6	46	51,1±21,4	0,122
	After	33	65,5±15,9	44	71,5±16,4	0,111
Vitality/ energy (VT)	Before	37	28,9±15,5	46	43,3±23,8	0,001
	After	33	58,5±15,2	44	69,7±17,0	0,004
Social functioning (SF)	Before	37	22,3±22,3	46	46,5±23,1	<0,001
	After	33	59,5±14,7	44	72,2±17,9	0,001
Role-emotional (RE)	Before	37	46,8±29,9	46	50,7±30,4	0,562
	After	33	67,7±30,6	44	72,0±22,7	0,481
Mental health (MH)	Before	37	40,8±24,5	46	52,3±22,3	0,027
	After	33	62,7±17,9	44	73,9±19,2	0,011

Table XVII. Comparison of Mean SF-36 Dimensional Rating Scale Values Before and After CABG in Relation to Cohabitation

SF-36		Cohabitation								
		Spouse		Children		Domestic helper/ Other		Alone		P
		n	$\bar{x}\pm SD$	n	$\bar{x}\pm SD$	n	$\bar{x}\pm SD$	n	$\bar{x}\pm SD$	
Health changes	Before	59	30,5±19,7	14	33,9±21,0	13	7,7±12,0	27	33,3±15,5	<0,001
	After	56	72,8±17,4	12	75,0±18,5	10	55,0±15,8	25	73,0±16,0	0,019
Physical functioning (PF)	Before	59	51,6±24,7	14	59,3±26,7	13	30,0±15,5	27	62,2±23,0	0,001
	After	56	78,2±12,5	12	85,0±9,8	10	60,5±12,3	25	84,2±10,1	<0,001
Role-physical (RP)	Before	59	37,3±30,6	14	44,6±26,3	13	28,8±20,0	27	50,0±24,0	0,091
	After	56	66,1±23,6	12	60,4±19,8	10	45,0±25,8	25	72,0±19,5	0,015
Bodily pain (BP)	Before	59	42,2±23,8	14	54,6±19,0	13	23,8±16,2	27	45,9±25,5	0,006
	After	56	74,2±18,2	12	85,4±14,6	10	57,8±15,6	25	74,2±20,5	0,007
General health (GH)	Before	59	47,6±21,0	14	48,9±25,0	13	19,2±22,7	27	42,4±22,5	0,001
	After	56	69,1±15,7	12	69,6±16,2	10	37,0±13,8	25	59,4±20,5	<0,001
Vitality/ energy (VT)	Before	59	36,2±20,8	14	36,1±24,1	13	18,5±12,1	27	31,1±22,2	0,049
	After	56	65,0±14,1	12	68,3±20,7	10	35,5±16,4	25	61,0±19,1	<0,001
Social functioning (SF)	Before	59	33,2±26,0	14	42,0±28,0	13	22,1±19,2	27	36,6±23,0	0,199
	After	56	64,1±17,0	12	67,7±18,8	10	47,5±11,5	25	64,5±19,0	0,030
Role-emotional (RE)	Before	59	49,2±31,2	14	50,0±36,4	13	43,6±25,0	27	39,5±29,3	0,550
	After	56	69,6±27,2	12	66,7±34,8	10	66,7±22,2	25	58,7±27,7	0,446
Mental health (MH)	Before	59	47,5±24,4	14	43,4±27,9	13	23,1±18,0	27	39,1±24,2	0,012
	After	56	70,5±17,8	12	66,7±22,8	10	42,0±25,9	25	58,7±21,3	<0,001

mensions, before and after CABG is demonstrating the essential role of support (emotional, familial, financial) provided by family and spouse.^{20,23}

Furthermore, individuals practicing self-care rated QoL more positively before and after CABG in dimensions of health change, physical functionality, physical role, bodily pain, general health, vitality, and social functionality. This finding seems to be consistent with other relevant studies, where it is underpinned that self-care a key component for QoL after GABG in patients with CHD and heart failure.^{37,38}

A noticeable finding of the present study was that participants who underwent 3 vessel CABG reported more negatively in both measurements (before and after) on physical functioning, physical role, bodily pain, vitality, and only before in social functioning. Six months after CABG, the overall QoL was improved.

In support of this view there is evidence of good postoperative QoL despite diagnosis of severe heart disease. Specifically, 6 months after surgery, 2 out of 3 patients reported QoL no worse than healthy population.³⁹ Also, Pačarić et al.,²⁰ showed that patients before CABG had poor QoL

in all subscales except social functioning. After CABG, in one month all subscales improved, but still QoL remained unsatisfactory whereas one year after satisfactory results were achieved in all subscales. In the study by Perrotti et al.,⁴⁰ QoL was improved up to 5 years after CABG and remained significantly improved at 10 years, suggesting the benefits from surgery.

Limitations of the study

The present study was of cross-sectional design and there was no evidence of causal relationship between variables under assessment. The method of convenience sampling in a single hospital in Attica is not representative of all patients undergoing CABG living in Greece, thus limiting the generalizability of the results. The SF-36 scale is a widely used tool that will help to compare the results with other research studies on a global scale.

Conclusion

The present study showed overall QoL improvement 6 months after CABG.

Table XVIII. Comparison of Mean SF-36 Dimensional Rating Scale Values Before and After CABG in Relation to Self Care

SF-36		Self Care				
		Yes		No		P
		n	$\bar{x}\pm SD$	n	$\bar{x}\pm SD$	
Health changes	Before	84	33,6 \pm 17,1	31	16,1 \pm 21,0	<0,001
	After	78	74,4 \pm 17,6	27	62,0 \pm 14,5	0,001
Physical functioning (PF)	Before	84	60,8 \pm 22,1	31	30,5 \pm 18,2	<0,001
	After	78	82,3 \pm 10,8	27	68,1 \pm 14,0	<0,001
Role-physical (RP)	Before	84	46,4 \pm 26,9	31	25,0 \pm 25,0	<0,001
	After	78	69,9 \pm 20,7	27	50,9 \pm 24,5	<0,001
Bodily pain (BP)	Before	84	48,0 \pm 22,6	31	25,8 \pm 20,1	<0,001
	After	78	77,9 \pm 18,5	27	61,6 \pm 14,9	<0,001
General health (GH)	Before	84	47,7 \pm 21,3	31	30,1 \pm 24,9	<0,001
	After	78	66,2 \pm 18,3	27	55,7 \pm 19,7	0,014
Vitality/ energy (VT)	Before	84	36,4 \pm 21,9	31	23,2 \pm 16,2	0,003
	After	78	65,1 \pm 16,8	27	50,4 \pm 18,8	<0,001
Social functioning (SF)	Before	84	40,3 \pm 24,2	31	15,7 \pm 17,1	<0,001
	After	78	65,9 \pm 18,0	27	54,2 \pm 13,9	0,001
Role-emotional (RE)	Before	84	45,6 \pm 31,8	31	46,2 \pm 28,1	0,926
	After	78	63,4 \pm 28,7	27	74,1 \pm 23,2	0,080
Mental health (MH)	Before	84	44,0 \pm 25,3	31	35,6 \pm 23,8	0,110
	After	78	66,0 \pm 20,7	27	59,1 \pm 23,3	0,149

Table XIX. Comparison of Mean SF-36 Dimensional Rating Scale Values Before and After CABG in Relation to Number of Vessels with CABG

SF-36		Number of Corrected Vessels with CABG						
		One		Two		Three		P
		n	$\bar{x}\pm SD$	n	$\bar{x}\pm SD$	n	$\bar{x}\pm SD$	
Health changes	Before	48	32,8 \pm 18,0	49	27,6 \pm 20,6	18	22,2 \pm 20,8	0,124
	After	43	74,4 \pm 19,4	47	70,7 \pm 16,7	15	63,3 \pm 12,9	0,107
Physical functioning (PF)	Before	48	59,9 \pm 23,6	49	53,2 \pm 24,9	18	31,7 \pm 17,1	<0,001
	After	43	81,6 \pm 11,6	47	79,7 \pm 11,5	15	67,0 \pm 16,5	0,001
Role-physical (RP)	Before	48	47,4 \pm 27,4	49	41,8 \pm 28,1	18	19,4 \pm 18,3	0,001
	After	43	70,3 \pm 22,7	47	64,4 \pm 20,0	15	51,7 \pm 29,1	0,024
Bodily pain (BP)	Before	48	52,0 \pm 23,4	49	38,2 \pm 23,0	18	26,0 \pm 16,4	<0,001
	After	43	80,1 \pm 17,9	47	69,3 \pm 19,1	15	69,0 \pm 17,5	0,014
General health (GH)	Before	48	47,4 \pm 23,5	49	41,4 \pm 22,7	18	35,6 \pm 25,1	0,159
	After	43	65,6 \pm 19,2	47	63,3 \pm 18,5	15	58,3 \pm 21,2	0,452
Vitality/ energy (VT)	Before	48	38,8 \pm 25,7	49	29,0 \pm 16,2	18	27,8 \pm 17,1	0,041
	After	43	66,4 \pm 17,9	47	58,7 \pm 16,0	15	55,0 \pm 23,8	0,049
Social functioning (SF)	Before	48	41,1 \pm 25,9	49	32,4 \pm 23,0	18	17,4 \pm 19,7	0,002
	After	43	66,9 \pm 19,6	47	60,9 \pm 15,1	15	57,5 \pm 18,2	0,126
Role-emotional (RE)	Before	48	49,3 \pm 33,7	49	42,2 \pm 28,7	18	46,3 \pm 28,3	0,523
	After	43	69,0 \pm 30,3	47	61,0 \pm 26,3	15	73,3 \pm 22,5	0,216
Mental health (MH)	Before	48	45,6 \pm 26,8	49	41,1 \pm 23,7	18	33,6 \pm 23,2	0,216
	After	43	69,0 \pm 22,4	47	62,5 \pm 18,8	15	56,3 \pm 25,0	0,104

The overall score of the SF-36 scale, as well as its dimensions before and after CABG was associated with socio-demographic and clinical factors, such as age, sex, education, work, comorbidities number of diseased vessels.

Assessment of QoL among patients with CABG should be evaluated systematically with ultimate goal to provide holistic care.

Based on the findings presented, it is suggested that un-

derstanding factors associated with QoL is fundamental to the development of appropriate interventions that address needs of individual who underwent CABG and help them live every day to its' full potential.

The present findings may guide future interventions and be valuable for both research and clinical practice.

Conflict of interest

The authors declare no conflict of interest.

ΠΕΡΙΛΗΨΗ

Ποιότητα ζωής ασθενών με στεφανιαία νόσο πριν και έξι μήνες μετά την αορτοστεφανιαία παράκαμψη

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Εισαγωγή: Η αορτοστεφανιαία παράκαμψη είναι ένας από τους πιο αποτελεσματικούς τρόπους θεραπείας της στεφανιαίας νόσου. Μπορεί να ανακουφίσει σημαντικά τα συμπτώματα ισχαιμίας του μυοκαρδίου και υποξίας των ασθενών και να βελτιώσει την ποιότητα ζωής τους. Σκοπός αυτής της μελέτης ήταν η διερεύνηση της ποιότητας ζωής ασθενών με στεφανιαία νόσο πριν και έξι μήνες μετά την αορτοστεφανιαία παράκαμψη.

Υλικό και Μέθοδος: Στην παρούσα μελέτη συμμετείχαν 115 ασθενείς που υποβλήθηκαν σε αορτοστεφανιαία παράκαμψη. Η συλλογή δεδομένων πραγματοποιήθηκε με την συμπλήρωση της ελληνικής έκδοσης της κλίμακας «Επισκόπηση υγείας SF-36 (Short Form-36 Health Survey)» στην οποία συμπεριλήφθησαν τα χαρακτηριστικά των ασθενών. Το επίπεδο στατιστικής σημαντικότητας ορίστηκε στο $p < 0,05$.

Αποτελέσματα: Από τους 115 συμμετέχοντες, το 74,8% ήταν άνδρες ενώ το 42,6% ήταν 60-69 ετών και το 71,3% είχε θετικό οικογενειακό ιστορικό καρδιακού νοσήματος. Επιπλέον, το 41,7% υποβλήθηκε σε αορτοστεφανιαία παράκαμψη ενός αγγείου. Οι ασθενείς εμφάνισαν σημαντική βελτίωση στην ποιότητα ζωής έξι μήνες μετά την επέμβαση σε όλες τις διαστάσεις της κλίμακας SF-36, $p < 0,001$. Πιο αναλυτικά, τα αποτελέσματα έδειξαν τις ακόλουθες τιμές μεταξύ μετρήσεων πριν και έξι μήνες μετά, στις εξής διαστάσεις: σωματική λειτουργικότητας $54,1 \pm 25,2$ έναντι $78,7 \pm 13,2$ ($p < 0,001$), σωματικός ρόλος $41,0 \pm 28,8$ vs $65,0 \pm 23,2$ ($p < 0,001$), σωματικός πόνος $42,0 \pm 24,4$ vs $73,7 \pm 19,0$ ($p < 0,001$), γενική υγεία $44,3 \pm 23,5$ vs $63,5 \pm 19,1$ ($p < 0,001$), ζωτικότητα $33,8 \pm 21,9$ vs $61,3 \pm 18,4$ ($p < 0,001$), κοινωνική λειτουργικότητα $34,2 \pm 25,7$ vs $62,9 \pm 17,7$ ($p < 0,001$), συναισθηματικός ρόλος $47,3 \pm 30,9$ vs $66,0 \pm 27,7$ ($p < 0,001$) και ψυχική υγεία $43,2 \pm 25,4$ vs $64,3 \pm 21,5$ ($p < 0,001$).

Συμπέρασμα: Η παρούσα μελέτη έδειξε συνολικά στατιστικά σημαντική βελτίωση έξι μήνες μετά την αορτοστεφανιαία παράκαμψη. Κοινωνικοδημογραφικοί και κλινικοί παράγοντες συσχετίζονται με την ποιότητα ζωής.

Λέξεις Ευρητηρίου: Στεφανιαία νόσος, ποιότητα ζωής ασθενούς, αορτοστεφανιαία παράκαμψη, μόσχευμα αορτοστεφανιαίας παράκαμψης

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