

Status of preventive services against coronary risk factors in primary healthcare for patients undergoing coronary artery bypass grafting

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ABSTRACT

Objectives: In this study, we aimed to investigate patients who underwent coronary artery bypass grafting (CABG) in our clinic and received preventive medical services in terms of coronary artery disease (CAD) risks in the primary care setting.

Patients and methods: The cross-sectional, descriptive study included a total of 147 patients (25 males, 122 females; mean age: 62.6±8.3 years; range, 45 to 75 years) scheduled for CABG surgery between March 2018 and December 2018. Demographic and clinical characteristics of the patients were recorded. The form prepared by the researchers was applied using the face-to-face interview technique to collect data.

Results: The patients admitted to primary healthcare facilities received more information about the increased risk of CAD for smoking, and they received more exercise and healthy diet recommendations (p<0.001). The patients admitted to primary care to receive healthcare services were more often screened for hypertension (HT), hyperlipidemia (HL), and diabetes mellitus (DM). Among patients with a diagnosis of HT, HL, and/or DM, those admitted to primary care services had statistically significantly more frequent controls (p<0.001).

Conclusion: In primary care, it is possible for patients to gain healthy lifestyle changes to protect them from CAD risks and to provide care and rehabilitation for individuals with chronic diseases. The strategies for primary healthcare services on this issue can be improved.

Keywords: Coronary artery bypass grafting, coronary risk, preventive health, primary care.

Similar to many countries, healthcare services in Turkey are organized as primary, secondary, and tertiary levels.^[1] Primary healthcare is placed centrally in health services and essentially includes preventive services.^[1] Preventive services include the protection of individuals who are not at the risk of disease, reduction of risk factors of individuals at risk, early diagnosis and treatment of existing diseases, and prevention of chronic diseases from causing permanent damage.^[2] These main goals are achieved through periodic health examinations (PHEs) with established standards by various national and international organizations.^[2] The PHE consists of surveillances that are recommended to be performed according to our national programs, which include the evaluation of healthy people according to age, sex, and risk groups on a regular basis using a series of standard procedures such as interviews, physical examination, laboratory tests, and immunization programs.^[2,3]

Coronary artery disease (CAD) is a chronic disease which develops over years with well-known risk factors

and is the most common cause of death in Turkey.^[3,4] To reduce both the frequency and mortality rates of coronary heart disease and other cardiovascular diseases, cardiovascular risk factors must be controlled first.^[3] Hypertension (HT), hyperlipidemia (HL), and diabetes mellitus (DM), obesity, physical activity, and smoking are modifiable cardiovascular risk factors. The Republic of Turkey, Ministry of Health recommends cardiovascular risk assessment at least once in all individuals over the age of 40 and in individuals under the age of 40, if there is a risk factor.^[2] Again, to be performed in the primary care, there are PHEs such as measuring blood pressure of

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individuals over 18 years old once a year, measuring cholesterol values over 35 years at least once and every five years afterwards, measuring fasting blood glucose once every three years for everyone over the age of 45 years, body mass index (BMI) once a year, and the results of these examinations affect the coronary risk.^[2]

Coronary artery bypass graft surgery (CABG) is an effective treatment method widely used in the treatment of CAD.^[5,6] It is well known that CABG prolongs the lifespan in the selected patient group.^[5] Considering that the most common cause of deaths in the society is CAD, preventive services to reduce CAD and related deaths are essential. In this study, we aimed to investigate the patients who underwent CABG operations in our clinic and received preventive healthcare services in terms of CAD risks in the primary care setting.

PATIENTS AND METHODS

This single-center, cross-sectional, descriptive study was conducted at Izmir Katip Celebi University, Atatürk Training and Research Hospital, Cardiovascular Surgery Clinic between March 2018 and December 2018. A total of 147 patients (25 males, 122 females; mean age: 62.6±8.3 years; range, 45 to 75 years) scheduled for CABG surgery were included. Patients with renal failure, chronic obstructive pulmonary disease, thyroid dysfunction, psychiatric disease, and malignancy were excluded from the study. A written informed consent was obtained from each patient. The study protocol was approved by the Izmir Katip Çelebi University Non-invasive Investigation Ethics Committee (No: 77/Date: 21.02.2018). The study was conducted in accordance with the principles of the Declaration of Helsinki.

1. What is your age? (Please write)	AND	What is your gender?	a. Female	b. Male
2. How tall are you? (Please write)	How many kg is your weight? (Please write)			
3. What is your education level?	a. Below 8 years	b. 8 years and more		
4. What is your marital status?	a. Single	b. Married		
5. What is your income level?	a. 1500 Turkish Liras and below	b. 1501 - 3500 Turkish Lira	c. 3501 Turkish Lira and above	
6. How would you evaluate your overall quality of life?	a. Low	b. Middle	c. High	
7. Do you smoke?	a. No I do not use	b. Yes I'm using		
8. Do you drink alcohol?	a. No I do not use	b. Yes I'm using		
9. Do you exercise regularly?	a. No	b. Yes		
10. Which health institution do you prefer most frequently when you get sick or for health checks?	a. Primary health care	b. Other institutions		
11. Has your family doctor provided you with detailed information about smoking causing cardiovascular diseases and increasing the risk of disease?	a) No	b) Yes		
12. Has your family doctor provided you with detailed information about excessive alcohol use causing cardiovascular diseases and increasing the risk of disease?	a) No	b) Yes		
13. Has your family doctor advised you to exercise by giving detailed information about regular exercise protecting from cardiovascular diseases and reducing the risk of disease?	a) No	b) Yes		
14. Has your family doctor advised you to eat a healthy diet by giving you detailed information about preventing cardiovascular diseases and reducing the risk of disease?	a) No	b) Yes		
15. Did your family doctor give you detailed information and suggest weight control about being overweight causing cardiovascular diseases and increasing the risk of disease?	a) No	b) Yes		
16. Has your family doctor ever measured your blood pressure before being diagnosed with heart disease?	a) No	b) Yes		
17. Has your family doctor ever measured your blood cholesterol before being diagnosed with heart disease?	a) No	b) Yes		
18. Has your family doctor ever measured your blood sugar before being diagnosed with heart disease?	a) No	b) Yes		
19. Do you have a diagnosis of hypertension and do you use blood pressure medication?	a) No	b) Yes		
20. Do you have a diagnosis of hyperlipidemia and do you use its medication?	a) No	b) Yes		
21. Do you have a diagnosis of diabetes mellitus disease and do you use its medication?	a) No	b) Yes		
22. How many times did you go to the Family Doctor for check-ups in the last 1 year for your hypertension? (Please write)				
23. How many times did you go to the Family Doctor for check-ups in the last 1 year for your hyperlipidemia? (Please write)				
24. How many times did you go to the Family Doctor for check-ups in the last 1 year for your diabetes mellitus? (Please write)				

Figure 1. 24-question sociodemographic data form.

Table 1
Sociodemographic data of patients and their healthcare center preferences

Sociodemographic features	Those who prefer primary care		Those who admitted to other institutions		<i>p</i>
	n	%	n	%	
Age (year)					0.022*
45-59	36	70.6	15	29.4	
60-75	48	50	48	50	
Sex					0.659
Female	13	52	12	48	
Male	71	58.2	51	41.8	
Body mass index (kg/m ²)					0.729
Normal (18.5-24.5)	20	62.5	12	37.5	
Overweight (25-29.9)	43	54.4	36	45.6	
Obese (30-40)	21	58.3	15	41.7	
Education					0.003*
Below 8 years	48	48.5	51	51.5	
8 years and more	36	75	12	25	
Marital status					0.405
Single	70	58.8	49	41.2	
Married	14	50	14	50	
Income rate					0.013*
1,500 Turkish Liras and below (low)	5	29.4	12	70.6	
1,501-3,500 Turkis Liras (medium)	55	56.7	42	43.3	
3,501 Turkish Liras and over (high)	24	72.7	9	27.3	
Perception of quality of life					<0.001*
Low	10	28.6	23	71.4	
Medium	53	61.6	33	38.4	
High	21	80.6	5	19.2	
Smoking					0.860
Not using	55	56.1	43	43.9	
Using	29	59.2	20	40.8	
Alcohol					0.078
Not using	50	51.5	47	48.5	
Using	34	68	16	32	
Exercise					0.018*
Yes	67	53.2	59	46.8	
No	17	81	4	19	

* Statistical significance ($p < 0.05$).

In the study, a 24-question sociodemographic data form prepared by the researchers and a questionnaire for the status of receiving healthcare services for protection from CAD were used to collect data (Figure 1). The data were obtained using the face-to-face interview technique with patients. According to sociodemographic characteristics, age was divided into two subgroups (45-59 years and 60-75 years), education status into two subgroups (<8-year and ≥8-year compulsory education), marital

status into two subgroups (single and married), BMI into three groups (normal, overweight, and obese), income in three subgroups (≤1,500 Turkish Lira [TL], 1,501-3,500 TL, and ≥3,501 TL), perception of quality of life in three subgroups (poor, medium and high), and smoking and alcohol use in two subgroups (non-users and users).

Since an average of 30 isolated CABG operations is performed each month in our clinic, the study

population was created with 300 individuals for the 10-month period for which data were collected. A total of 143 CABG planned patients were calculated for the study due to sample size to be achieved for the study with a 90% confidence interval, a 5% margin of error, and HT screening frequency of 48.6% by the statistics specified by The Republic of Turkey, Ministry of Health.^[4]

Statistical analysis

Statistical analysis was performed using SPSS for Windows version 16.0 software (SPSS Inc., Chicago, IL, USA). In this study the distribution of the data was tested with Kolmogorov-Smirnov. It was found that the data were not distributed normally. So the statistical comparison of mean values of two independent groups was performed using the Mann-Whitney U test. The between group comparisons of categorical variables were performed using the Chi-square test.

RESULTS

Of the patients, patients aged ≤ 59 years preferred primary healthcare services more than patients aged ≥ 60 years ($p=0.022$). The primary healthcare services were more preferred by those with an education status of ≥ 8 years, those with an income level of $\geq 3,500$ TL, those with a good level of quality of life, and those who exercised regularly ($p=0.003$, $p=0.013$, $p<0.001$, and $p=0.018$, respectively) (Table 1).

When we examined whether the patients received lifestyle recommendations for protection from CAD, the patients who preferred primary healthcare facilities received more information that smoking increased the risk of CAD ($p<0.001$). Again, the patients who preferred primary healthcare facilities received more recommendations for coronary protection including exercise, healthy diet recommendations, and weight control recommendations ($p<0.001$) (Table 2).

Sociodemographic features	Those who prefer primary care		Those who admitted to other institutions		<i>p</i>
	n	%	n	%	
Getting information about smoking					<0.001*
Did not receive	30	38	49	62	
Received	54	79.4	14	20.6	
Getting information about alcohol					<0.001*
Did not receive	42	42.4	57	57.6	
Received	42	87.5	6	12.5	
Getting advice to exercise					<0.001*
Did not receive	34	40	51	60	
Received	50	80.6	12	19.4	
Getting healthy dietary advice					<0.001*
Did not receive	33	39.8	50	60.2	
Received	51	79.7	13	20.3	
Getting weight control advice					<0.001*
Did not receive	35	41.2	50	58.8	
Received	49	79	13	21	
Blood pressure measurement					<0.001*
Did not perform	29	36.3	51	63.7	
Performed	55	82.1	12	17.9	
Blood test recommendation for hyperlipidemia					<0.001*
Did not receive	19	33.3	38	66.7	
Received	65	72.2	25	27.8	
Blood test recommendation for diabetes mellitus					<0.001*
Did not receive	13	23.2	43	76.8	
Received	71	78	20	22	

* Statistical significance ($p<0.05$).

Table 3
Patients' chronic disease control visits and their health center preferences

	Those who prefer primary care				Those who admitted to other institutions				<i>p</i>
	n	%	Median	25 th -75 th percentile	n	%	Median	25 th -75 th percentile	
Presence of hypertension diagnosis									<0.001*
No	30	38			49	62			
Yes	54	79.4			14	20.6			
Presence of hyperlipidemia diagnosis									<0.001*
No	42	42.4			57	57.6			
Yes	42	87.5			6	12.5			
Presence of diabetes mellitus diagnosis									<0.001*
No	34				51	60			
Yes	50				12	19.4			
Continuous variables									
Hypertension control frequency			3	2-4			1	0-2	<0.001*
Hyperlipidemia control frequency			3	2-4			1	0-2	<0.001*
Diabetes mellitus control frequency			2.5	2-4			1	0-2	<0.001*

* Statistical significance ($p < 0.05$).

More HT, HL, and DM screening were performed in the patients who essentially preferred primary care to receive healthcare services ($p < 0.001$). Of the patients, the rate of blood pressure measurement was 45.6% ($n=67$), the rate of those who had cholesterol tests was 61.2% ($n=90$), and the rate of those who had blood glucose control was 61.9% ($n=91$) for screening purposes in the primary healthcare facilities. There was no significant difference in terms of patients' healthcare center preferences and the presence of HT, HL, and DM diagnoses ($p > 0.005$). On the other hand, the patients with HT, HL, and DM who preferred primary healthcare facilities had statistically significantly more frequent controls for disease ($p < 0.001$) (Table 3).

DISCUSSION

In the present study, we investigated whether the patients who were scheduled for CABG operation received primary healthcare services for CAD risks. Our study results showed that patients admitted to primary healthcare facilities were screened more for HT, DM, and HL and received more recommendations about the coronary injuries of smoking and coronary benefits of regular exercise and weight control. Among the patients with chronic diseases, those who preferred primary healthcare had also more frequent controls for the disease.

Previous studies have shown that health systems organized based on effective primary care, in which well-trained family physicians work, provide more effective healthcare, both economically and clinically, than passive ones.^[1,7] Coronary artery disease patients are one of the most common patient groups seen by family physicians in the primary care setting.^[3] The World Health Organization emphasized that 3.8 million men and 3.4 million women died annually due to CAD in 2008 and that 11.1 million individuals were estimated to die for CAD in 2020.^[8] According to the Turkish Adult Risk Factor Study (TEKHARF) data, which is a 26-year cohort study conducted in our country, deaths due to coronary heart disease are the first among all-cause of mortality with a prevalence of 42%.^[9]

According to data from the 2016 Health Survey of Turkey by the Turkish Statistical Institute (TSI), the rate of individuals who had their blood pressure measured using the primary healthcare services were found to be 48.6%.^[4] In our study, 45.6% of the patients had their blood pressure measured in primary healthcare. Also, based on TSI data, the rates of patients who benefitted from preventive care in Turkey for cholesterol and blood glucose level measurement were 36.7% and 39.7%, respectively.^[4] In our study, these rates were 61.2% and 61.9%, respectively. The reason why the cholesterol and blood glucose measurements

of the patients included in our study were performed more frequently may be that the patients preferred the primary healthcare more in the Aegean region and the number of family medicine specialists in the Aegean region was higher.^[4,10]

In our study, the patients with a diagnosis of chronic disease preferred primary healthcare more frequently. In the study of İlhan et al.,^[11] those with chronic diseases also preferred primary healthcare services more frequently. Again, in the systematic review prepared by Reynolds et al.,^[12] the patients with chronic diseases visited primary healthcare services more commonly. Primary healthcare services can be expected to be preferred by individuals with chronic diseases due to their easy accessibility and providing comprehensive, continuous, and coordinating care.^[7,12] Protection from chronic diseases and treating and rehabilitating individuals with chronic diseases have an important place in the practice of family medicine.^[7] It can be predicted that the coronary risks of patients with HT, HL, and DM, which are the risk factors for CAD, can be also reduced by effective care in the primary healthcare facilities.

Furthermore, in our study, we found that the individuals who chose primary healthcare received more physical exercise and healthy diet recommendations, and obtained more information about the coronary risks of smoking. It is well known that even simple suggestions of physicians for patients to quit smoking affect patients to quit smoking.^[13] It is also stated that giving “quit smoking” advice, particularly by primary care physicians provides more effective results.^[14] Studies have shown that patients adapt more to physical activity and healthy dietary recommendations in primary care, providing the chance to protect patients from many diseases.^[15,16] Currently, smoking, physical inactivity, and unhealthy diet pose serious risks for CAD, and healthy lifestyle recommendations of primary care physicians are of utmost importance in reducing patients' CAD risks. By protecting patients from coronary risks, the rate of CABG operations and, consequently, health expenses and loss of job can be reduced, as well.

Due to the data collected from a single city, the results of the study cannot be generalized to the overall population in Turkey. In addition, data were collected only from a tertiary health institution. Further studies in larger populations would provide more information on this issue.

In conclusion, performing necessary examinations in accordance with the PHE recommendations of the Republic of Turkey, Ministry of Health for patients admitting to primary healthcare is of a paramount importance in terms of protection from CAD. In primary healthcare, it is possible for patients to gain a healthy lifestyle, to be protected from chronic diseases, and to provide care and rehabilitation for individuals diagnosed with chronic diseases. Therefore, the main goals should be to increase the strategies for primary healthcare services, to increase the knowledge and awareness of primary care physicians on this issue with in-service training, and to provide a more multidisciplinary service to patients.

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