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Factors affecting quality of life in patients with coronary heart disease

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Background: Cardiovascular diseases are currently the most common cause of death worldwide and associated with significant impairment of quality of life (QOL). In this study, we aimed to evaluate the QOL patients with coronary heart disease (CHD) in our country and the factors associated with QOL in these patients.

Materials and Methods: The study population was composed of 85 patients diagnosed with stable CHD. The data were collected using Ferrans and Powers' Quality of Life Index Cardiac Version-IV and the query designed by the investigators.

Results: Eighty-five patients (29 female, 56 male; ages between 38 and 72 years) were enrolled in this study. Married patients and those with greater incomes had greater QOL scores. Patients who had difficulties in daily works due to cardiac problems had lower QOL. Interestingly, patients with previous coronary intervention or surgey had similar QOL scores compared to those without. Patients who got emotional and social support had a greater social/economic score and who were able to get tangible social support had a higher global QOL score. Independent variables affecting the global QOL were marital and financial status, prior myocardial infarction (MI), and having difficulty in daily works.

Conclusion: Marital and financial status, prior MI, and having difficulty in daily works are the main determinants for the QOL in patients with CHD. Social support may increase the effectiveness of their rehabilitation and psychosocial activity, thereby QOL. Effective public health interventions should be aimed at improving QOL, especially in the most vulnerable groups.

Key Words: Coronary heart disease, quality of life, social support

Koroner arter hastalarında yaşam kalitesini etkileyen faktörler

Amaç: Günümüzde tüm dünyada kardiyovasküler hastalıklar en sık ölüm nedenidir ve yaşam kalitesinde ciddi azalmaya yol açmaktadır. Bu çalışmada ülkemizde, koroner arter hastalarında yaşam kalitesi ve yaşam kalitesini etkileyen faktörler araştırılmıştır.

Gereç ve Yöntemler: Çalışmaya koroner arter hastalığı (KAH) tanısı konulmuş 85 hasta alınmıştır. Veriler Ferrans ve Power yaşam kalitesi endeksinin kardiyak versiyonu ve araştırmacılar tarafından hazırlanan anket ile toplanmış ve değerlendirilmiştir.

Bulgular: Evli ve daha yüksek gelir düzeyine sahip hastalarda sosyal yaşam kalitesi değerleri daha yüksektir. Kalp sorunları nedeniyle günlük işlerinde zorluk yaşayan hastalarda ise yaşam kalitesi düşük bulunmuştur. İlginç olarak daha önce geçirilmiş perkütan koroner girişim veya cerrahi öyküsü olanlarda yaşam kalitesi değerleri benzer öyküsü olmayan hastalarla benzer bulunmuştur. Duygusal ve sosyal destek alanlarda sosyal/ekonomik ve enstrümental destek alanlarda ise global yaşam kalitesi değerleri daha yüksek bulunmuştur. Global yaşam kalitesini etkileyen bağımsız değişkenler ise medeni ve maddi durum, geçirilmiş miyokard enfarktüsü (ME) ve günlük işlerde zorluk yaşamak olarak bulunmuştur.

Sonuç: Medeni ve maddi durum, geçirilmiş ME ve günlük işlerde zorluk yaşamak KAH olanlarda yaşam kalitesini etkileyen temel faktörlerdir. Sosyal destek, hastaların rehabilitasyonu kolaylaştırıp psikososyal aktivitesini düzelterek yaşam kalitesini artırabilir. Etkin halk sağlığına yönelik girişimler özellikle en duyarlı gruplar olmak üzere KAH olan bireylerde yaşam kalitesini iyileştirmeye yönelik uygulanmalıdır.

Anahtar Sözcükler: Koroner arter hastalığı, yaşam kalitesi, sosyal destek

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Introduction

Cardiovascular diseases are currently the most common cause of death worldwide (1). Similarly, in our country the leading cause of mortality is cardiovascular diseases (2). Although there is a tendency to decrease in deaths caused by cardiovascular diseases, prevalence of coronary heart disease is still increasing in our country (3). Patients with circulatory diseases have been shown to be less satisfied with their lives than those hospitalized for other reasons (4). Coronary heart disease (CHD) is associated with significant impairment of health-related quality of life and other patient-reported health status (5).

In this study, we aimed to evaluate the quality of life in patients with coronary heart disease in Turkey and the factors associated with the quality of life in these patients.

Materials and Methods

Selection of patient population

The study was designed as a cross-sectional descriptive model. The patients diagnosed with coronary artery disease and with stable symptoms during the study were enrolled in the study. The diagnosis was based on the criteria of either having a ≥50% stenosis in ≥1 major epicardial coronary arteries in those undergoing their first cardiac catheterization or having a history of percutaneous coronary intervention (angioplasty and/or stenting) and/or coronary artery bypass surgery. Patients with a history of acute myocardial infarction and unstable angina pectoris within the previous 3 months, with severe heart failure, and with severe comorbidities that may affect their quality of life, such as renal failure or severe anemia, were excluded. From all the patients included in the study, informed consent to participate in the study was obtained.

Collection of clinical data

Data about the descriptive characteristics of the patient population were collected face to face using a query form developed by the investigator. This query form has 40 questions (9 are open-ended) including 3 main parts as sociodemographic characteristics (age, sex, educational and marital status, living place, and occupational and financial status), disease and treatment specific variables (prior hospitalization, age of disease onset, hypertension, diabetes mellitus, hyperlipidemia, prior myocardial infarction, frequency of medication, prior interventions, smoking/alcohol cessation, diet application, and difficulty in daily works due to cardiac complaints), and support systems during the disease course (emotional social, cognitive social, and tangible social supports and support by health workers).

Collection of health-related quality of life data

The health-related quality of life data were measured using Ferrans and Powers' Quality of Life Index Cardiac Version- IV (6) and by face-to-face interviews with the patients with coronary artery disease. The quality of life index (QLI)- cardiac version-IV contains 70 items. These items were divided into 2 equal parts; part 1 measures the satisfaction of the patients with various life domains; and part 2 measures the importance of these domains to the patient. Scores on part 1 were weighted by the responses on part 2. The quality of life index (QLI)- cardiac version-IV has 4 main domains (health and functioning, socioeconomic, psychosocial and spiritual, family) and global quality of life. The scales and items of the quality of life index (QLI)- cardiac version-IV have satisfactory reliability, validity, and responsiveness also in patients with CHD (7,8). We applied the queries to 85 patients who accepted to participate in the study.

Satistical analysis

Data were transferred to a computer and all statistical analysis were performed using SPSS 10.0 for Windows. Continuous variables were expressed as mean ± standard deviation and the categorical variables as percent. Student's t-test and variance analysis (ANOVA) were used in the statistical analysis of the data. We used multivariate linear regression analysis to identify and quantify predictors of quality of life in the patients. $P < 0.05$ was considered statistically significant.

Results

Eighty-five patients admitted to the cardiology department due to cardiovascular problems were enrolled in this study. Most of the patients were male (66%), 59-69 years of age (41%), married (74%), graduated form primary school (39%), working as a government employee (31%) (almost all of the females were housewives), having monthly income above 602 Turkish liras (46%), and living in a city (71%). Twenty-seven patients (32%) were admitted firstly due to cardiovascular problems but most of the patients (38%) had 2 or more admissions for cardiovascular reasons. Fourteen (17%) had hypertension (HT), 7 (8%) had diabetes mellitus (DM), 25 (29%) had hyperlipidemia (HL), and 9 (11%) had prior myocardial infarction (MI). The disease was mostly diagnosed when the patients were 59-69 years old (34%). Most of the patients (80%) had a previous history of coronary angiography or percutaneous coronary intervention or coronary bypass surgery. Most of the patients (82%) gave up smoking or taking alcohol after diagnosis but only 13 patients (15%) always followed the recommended diets. Majority of the patients (37%) had to take 3 or more pills daily and most (86%) had difficulties during daily works due to cardiac symptoms. Most of the patients (98%) got emotional social support and declared that their partners were the supporter (61%). Eighty-two patients (97%) stated that they were able to get cognitive social support and again mostly by their partners (56%). Only 29% of the patients had tangible social support and mostly their children (85%) gave this support. Forty-four patients (52%) stated that they got adequate support by health workers; nurses (52%) and doctors (48%) were giving this support. Forty-one patients (48%) had no idea about social service and 71 patients (84%) declared that they had never met with a social worker. Only 6 patients (7%) stated that they got help and support form a social worker during disease course.

The data were composed of 4 parts, namely social and economic status, health and functional status, psychosocial/spiritual status, family status, and global quality of life. Regarding the mean quality of life scores of the patients with coronary heart disease, the familial status had the highest score and the social and economic status had the lowest score (Table 1).

There were no differences in social and economic, health and functional, psychosocial/spiritual, familial status, and global quality of life concerning gender. As to age group, only the patients 37-47 years had a greater health and functional status score than the other 3 groups. The patients graduated from high school or university had greater social and economic, health and functional, and global quality of life scores than those graduated from primary or secondary school. Married patients had higher social and economic, and familial and global quality of life scores compared to single or divorced individuals. Patients working as a government employee had a greater familial and global quality of life scores than others. The patients with greater income had higher social and economic, health and functional, psychosocial/spiritual, and global quality of life scores. Patients living in cities had greater health and functional, psychosocial/spiritual, and global quality of life scores than those living in rural areas (Table 2).

The patients diagnosed of coronary heart disease at the age of 37-47 years had a higher health and functional score than the others. The patients with a prior MI history had lower health and functional, social and economic, psychosocial/spiritual, and global quality of life scores than those without. The patients having ≥3 drugs daily had a greater health and functional, psychosocial/spiritual, and global quality of life score than those taking less. Interestingly, the patients with previous coronary

Table 1. Mean life quality scores of the patients.

Parts of life quality	Number of patients	Mean (SD)
Health and Functional Status	85	15.3 (±0.93)
Social and Economic Status	85	14.3 (±0.32)
Psychosocial/spiritual Status	85	17.5 (±1.34)
Family Status	85	19.2 (±1.32)
Global Quality of Life	85	16.0 (±0.94)

SD: Standard deviation

Table 2. The social and economic, health and functional, psychosocial/spiritual, familial status, and global quality of life of the patients with coronary heart disease according to their sociodemographic features.

Variables (n)	Social and economic status	Health and functional status	Psychosocial/ spiritual status	Familial status	Global quality of life
Gender					
Male (56)	14.3 ± 0.12	15.3 ± 0.14	17.8 ± 0.16	19.3 ± 0.17	16.0 ± 0.12
Female (29)	14.2 ± 0.13	15.2 ± 0.18	17.4 ± 0.25	18.9 ± 0.23	15.9 ± 0.16
Age (years)					
37-47 (5)	15.8 ± 1.78	15.4 ± 1.24*	18.7 ± 1.71	20.1 ± 1.0	16.9 ± 1.38
48-58 (23)	15.2 ± 1.21	14.1 ± 0.89	17.3 ± 1.38	18.9 ± 1.48	15.9 ± 0.92
59-69 (35)	15.4 ± 0.91	14.3 ± 0.72	17.5 ± 1.20	19.4 ± 1.12	16.1 ± 0.67
≥70 (22)	15.0 ± 0.86	14.3 ± 0.67	17.4 ± 1.10	18.9 ± 1.22	15.9 ± 0.86
Education					
Primary school (33)	15.0 ± 0.92	14.1 ± 0.82	17.4 ± 1.33	19.0 ± 1.12	15.8 ± 0.78
Secondary school (15)	15.0 ± 0.88	14.3 ± 0.84	17.1 ± 1.32	19.1 ± 1.33	15.9 ± 0.83
High school (22)	15.7 ± 1.12*	14.5 ± 0.78*	18.1 ± 1.22	19.1 ± 1.29	16.4 ± 0.82*
University (15)	15.5 ± 0.82*	14.7 ± 0.92*	17.5 ± 1.14	19.9 ± 1.14	16.3 ± 0.86*
Marital Status					
Married (63)	15.4 ± 0.96*	14.4 ± 0.83	17.6 ± 1.26	19.5 ± 1.16*	16.2 ± 0.83*
Single/Divorced (22)	14.8 ± 0.99	14.0 ± 0.74	17.1 ± 1.28	18.2 ± 1.17	15.6 ± 0.87
Occupational Status					
Own-business (20)	15.2 ± 1.04	14.2 ± 0.84	16.9 ± 1.29	18.9 ± 1.27	15.9 ± 0.84
Government employee (26)	15.1 ± 0.98	14.7 ± 0.83	17.8 ± 1.28	19.9 ± 1.11*	16.4 ± 0.85*
Housewife (28)	15.0 ± 1.05	14.1 ± 0.86	17.7 ± 1.37	18.9 ± 1.24	15.7 ± 0.49
Farmer (11)	15.0 ± 0.58	14.2 ± 0.39	17.1 ± 0.59	18.8 ± 1.10	15.7 ± 0.49
Financial Status (TL)					
150-300 (19)	14.6 ± 0.72	13.9 ± 0.82	16.9 ± 0.56	18.7 ± 1.03	15.4 ± 0.54
301-601 (27)	15.3 ± 1.01	14.2 ± 0.63	17.2 ± 1.27	19.2 ± 1.42	15.9 ± 0.92
≥602 (39)	15.5 ± 0.98*	14.6 ± 0.82*	18.0 ± 1.34*	19.5 ± 1.17	16.3 ± 0.83*
Living Place					
Rural (25)	15.0 ± 0.58	13.8 ± 0.53	16.9 ± 0.47	18.8 ± 1.16	15.6 ± 0.45
Urban (60)	15.4 ± 1.02	14.5 ± 0.83*	17.8 ± 1.31*	19.4 ± 1.28	16.2 ± 0.88*

TL: Turkish Lira, $: 1.410, *: $P < 0.05$

intervention or CABG had similar quality of life scores compared to those without. Smoking and/or alcohol cessation improved the health and functional status, psychosocial/spiritual status, and global quality of life in these patients. The patients who had difficulties in daily works due to cardiac problems had lower social and economic, health and functional, and global quality of life scores than those who did not (Table 3).

The patients who got emotional and social support had a greater social and economic score than those who did not. The patients who were able to get tangible (instrumental) social support (i.e. financial support and/or having help in daily works) had a higher global quality of life score than those who were not (Table 4).

The independent variables affecting global quality of life in the patients with coronary heart disease were marital status, financial status, prior MI, and having difficulty in daily works (Table 5). Independent determinants for the social and economic status of the patients were financial status

Table 3. The social and economic, health and functional, psychosocial/spiritual, familial status, and global QOL of the patients with the CHD according to their clinical data.

Variables (n)	Social and economic status	Health and functional status	Psychosocial/ spiritual status	Familial status	Global quality of life
Prior hospitalization					
None (27)	15.5 ± 1.03	14.3 ± 0.74	17.4 ± 0.84	19.4 ± 1.47	16.2 ± 0.85
1 (26)	15.2 ± 1.12	14.1 ± 1.05	17.2 ± 1.50	18.9 ± 1.19	15.8 ± 0.99
≥2 (32)	15.1 ± 0.84	14.5 ± 0.63	17.8 ± 1.36	19.3 ± 1.14	16.0 ± 0.79
Age of disease onset (years)					
26-36 (7)	15.2 ± 1.59	14.5 ± 1.87	18.5 ± 2.03	18.9 ± 1.61	16.2 ± 1.61
37-47 (14)	15.6 ± 1.15	14.8 ± 0.49*	17.8 ± 0.88	19.6 ± 1.08	16.4 ± 0.79
48-58 (23)	15.1 ± 0.88	14.2 ± 0.65	17.2 ± 1.15	18.8 ± 1.39	15.8 ± 0.76
59-69 (29)	15.3 ± 0.84	14.1 ± 0.66	17.6 ± 1.22	19.5 ± 1.03	16.1 ± 0.66
≥70 (12)	15.0 ± 0.98	14.3 ± 0.72	17.1 ± 1.31	18.9 ± 1.34	15.8 ± 0.29
Hypertension					
Yes (14)	15.2 ± 1.61	14.2 ± 1.09	17.4 ± 1.38	19.4 ± 1.21	15.9 ± 1.29
No (71)	15.3 ± 0.85	14.3 ± 0.76	17.5 ± 1.26	19.2 ± 1.26	16.0 ± 0.77
Diabetes Mellitus					
Yes (7)	14.8 ± 1.53	14.3 ± 0.83	16.9 ± 1.53	18.6 ± 0.86	15.5 ± 1.19
No (78)	15.3 ± 0.94	13.9 ± 0.63	17.5 ± 1.25	19.2 ± 1.27	16.1 ± 0.83
Hyperlipidemia					
Yes (25)	15.2 ± 0.98	14.5 ± 0.68	17.4 ± 0.96	18.8 ± 1.16	15.9 ± 0.75
No (60)	15.3 ± 1.00	14.2 ± 0.85	17.5 ± 1.39	19.4 ± 1.25	16.0 ± 0.92
Prior MI					
Yes (9)	14.3 ± 0.93*	13.5 ± 0.44*	16.1 ± 1.64*	18.2 ± 1.45	14.9 ± 0.82*
No (76)	15.4 ± 0.94	14.4 ± 0.80	17.7 ± 1.13	19.3 ± 1.19	16.1 ± 0.79
Frequency of medication (/day)					
1-2 (54)	14.2 ± 0.16	15.2 ± 0.22	17.2 ± 0.27	19.1 ± 0.24	15.9 ± 0.19
≥3 (31)	14.5 ± 0.10	16.3 ± 0.12*	17.8 ± 0.14*	19.4 ± 0.17	16.2 ± 0.10*
Percutaneous intervention/CABG					
Yes (68)	14.3 ± 0.10	15.2 ± 0.12	17.5 ± 0.15	19.2 ± 0.14	15.9 ± 0.10
No (17)	14.4 ± 0.19	15.4 ± 0.28	17.4 ± 0.32	19.2 ± 0.38	16.1 ± 0.24
Smoking/Alcohol cessation					
Yes (70)	15.5 ± 1.07	14.5 ± 0.77*	17.7 ± 1.44*	19.5 ± 1.15	16.2 ± 0.90*
No (15)	15.0 ± 0.99	13.8 ± 0.92	17.1 ± 0.92	18.9 ± 1.42	15.7 ± 0.79
Diet application					
Always (13)	15.5 ± 1.55	14.5 ± 0.69	17.6 ± 2.22	19.4 ± 1.47	16.2 ± 1.38
Sometimes (60)	15.3 ± 0.89	14.3 ± 0.87	17.5 ± 1.15	19.2 ± 1.22	16.0 ± 0.81
Rarely (12)	14.8 ± 0.62	14.3 ± 0.64	17.3 ± 0.57	18.9 ± 1.22	15.7 ± 0.42
Difficulty in daily Works					
Yes (73)	14.2 ± 0.09*	15.1 ± 0.10*	17.5 ± 0.14	19.1 ± 0.15	15.9 ± 0.09*
No (12)	14.9 ± 0.26	15.9 ± 0.38	17.4 ± 0.42	19.7 ± 0.34	16.5 ± 0.29

CABG: Coronary artery bypass grafting, MI: Myocardial infarction, *: $P < 0.05$

Table 4. The social and economic, health and functional, psychosocial/spiritual, familial status, and global quality of life of the patients with the coronary heart disease according to their supports.

Variables (n)	Social and economic status	Health and functional status	Psychosocial/ spiritual status	Familial status	Global quality of life
Emotional Social Support					
Yes (83)	14.3 ± 0.08*	15.2 ± 0.10	17.5 ± 0.14	19.2 ± 0.14	16.0 ± 0.09
No (2)	12.9 ± 1.47	14.9 ± 2.46	17.1 ± 0.42	18.2 ± 1.0	15.3 ± 1.65
Cognitive Social Support					
Yes (82)	14.3 ± 0.09	15.2 ± 0.11	17.5 ± 0.14	19.2 ± 0.14	16.0 ± 0.09
No (3)	13.8 ± 0.13	15.5 ± 0.47	16.7 ± 0.37	19.5 ± 0.83	15.9 ± 0.41
Tangible Social Support					
Yes (25)	14.0 ± 0.22	15.0 ± 0.26	17.0 ± 0.30	18.8 ± 0.27	16.1 ± 0.09*
No (60)	14.4 ± 0.08	15.3 ± 0.11	17.6 ± 0.15	19.3 ± 0.16	15.7 ± 0.24
Support by Health Workers					
Yes (44)	14.3 ± 0.09	15.3 ± 0.10	17.5 ± 0.17	19.3 ± 0.18	16.0 ± 0.09
No (41)	14.2 ± 0.16	15.1 ± 0.19	17.4 ± 0.22	19.0 ± 0.21	15.9 ± 0.17

*: $P < 0.05$.

Table 5. Independent variables affecting the global quality of life in the patients with coronary heart disease.

Variables	β	t	P value
Age	0.01	0.08	0.9
Gender	-0.2	-0.8	0.4
Education	0.04	0.3	0.8
Marital Status	0.4	3.2	0.002
Occupational Status	-0.05	-0.2	0.8
Financial Status	0.4	2.7	0.01
Living Place	-0.2	-1.7	0.09
Prior Hospitalization	-0.2	-1.6	0.1
Age of Disease Onset	0.05	0.4	0.7
Hypertension	-0.01	-0.1	0.9
Diabetes Mellitus	-0.09	-0.8	0.5
Hyperlipidemia	0.08	0.8	0.4
Prior MI	-0.4	-3.7	0.001
Frequency of Medication	0.2	1.8	0.08
Percutaneous Intervention/CABG	0.05	0.5	0.7
Smoking/Alcohol cessation	0.06	0.5	0.6
Diet application	-0.02	-0.2	0.8
Difficulty in daily Works	-0.3	-2.7	0.01
Emotional Social Support	0.2	1.7	0.08
Cognitive Social Support	0.04	0.4	0.7
Tangible Social Support	-0.02	-0.2	0.8
Support by Health Workers	-0.2	-1.7	0.09

β: Standardized coefficient (R).

(β = 0.3, t = 2.5, P = 0.02), frequency of medication (β = -0.3, t = 2.9, P = 0.004), having difficulties in daily works due to coronary heart symptoms (β = -0.5, t = -4.6, P = 0.001) prior MI (β = -0.3, t = -3.3, P = 0.002), and having emotional social support (β = 0.4, t = 4.1, P = 0.001).

Factors affecting the health and functional status of the patients were marital status (β = 0.3, t = 2.5, P = 0.02), financial status (β = 0.4, t = 2.5, P = 0.02), prior MI (β = -0.3, t = -2.9, P = 0.005), and having support by health workers (β = 0.2, t = 1.9, P = 0.04). The financial status (β = 0.3, t = 2.3, P = 0.03), prior MI (β = -0.4, t = -3.4, P = 0.001), and support by health workers (β = 0.3, t = 2.3, P = 0.02) were independent variables affecting the psychosocial/spiritual status.

Discussion

Health-related quality of life (HRQL) is increasingly used as an outcome in clinical trials, effectiveness research, and research on quality of care (9). Measures of life quality that evaluate functioning, wellness, and happiness do not depend only on physical findings. Social and psychological aspects should also be evaluated during the consideration of an individual's wellness. Characteristics of the individual (e.g. motivation and values) and of the environment (e.g. social and psychological supports) are proposed to influence QOL (10). Several studies suggest that assessment of QOL can lead to improvements in QOL (11,12). Patients with CHD had lower HRQL scores than patients without CHD (5,13). QOL is considerably affected in patients following a cardiac event, especially during the initial recovery phase. Although substantial improvement in QOL occurs over time, the persistence of residual distress at 1-year follow-up is a challenge for clinicians concerned with the full rehabilitation of the cardiac patient (14). Therefore, the measurement of QOL and the assessment of the factors affecting the QOL may help us to improve and maintain the QOL in the patients with CHD.

In contrast to many previous studies reporting that females had worse QOL (13,15-17), sex was not an important determinant for QOL in the patients with CHD in this study. In accordance with many previous reports (18-20), marital status greatly affected the QOL in patients in our study. The patients living alone had worse quality of life scores. Similar to the previous reports (21,22), educational status was closely associated with the QOL in these patients. The patients graduated from high school or university had higher QOL scores than those graduated from primary and/or secondary schools. Government employees and patients with higher socioeconomic status had higher QOL scores as suggested by some previous reports (19,23). Patients living in urban areas had higher QOL than those living in rural areas similar to the results from Bulgaria (24).

Regarding clinical variables, previous myocardial infarction was found to be an important determinant for QOL. Anxiety and depression in both patients and their family after MI and persistent and/or reoccurring symptoms are some suggestions to explain lower QOL after MI (25,26). As Ulvik et al. (27) reported, impaired physical function and having difficulty in daily works due to cardiac symptoms decreased the QOL significantly. Efficient medical treatment may cause patients to feel better and safe and therefore improves their subjective life quality (28). In our study, the patients having medications ≥3 times/day were found to have greater QOL scores. However, interestingly, previous coronary bypass surgery and/or percutaneous coronary interventions did not have any effect on the QOL in these patients. Although this is in contrast to many previous reports (29,30), there are some clues that improved HRQL after revascularization may deteriorate afterwards (31). The long time passed after revascularization in these patients (mean 4.2 ± 2.6 years) may explain our results. Moreover, Spadoti (32) suggested that clinical interventions focusing on patients' psychological conditions are necessary to improve QOL after the surgery. Quality of life benefits of revascularization are diminished by continued smoking and efforts to promote smoking cessation may improve health outcomes of these procedures (33). Similarly, we found that smoking/alcohol cessation are associated with a higher QOL.

Perceived lack of needed assistance was related to mortality and decreasing in physical functioning. Adequacy of tangible support was an important prognostic factor for these patients with CHD and may be a determinant of health outcomes (34). Accordantly, we found that tangible social support increased the global QOL. However, although social support is an important correlate of HRQL for both men and women (35) and HRQL significantly improves for CHD patients during disease management program participation (36). In our study, we found that the patients who got emotional and social support had a greater social and economic score than those who did not. Emotional social support is one of the independent determinants for the social and economic status of the patients. However, emotional/cognitive social support and support by health workers did not affect global quality of life in our study. Ineffectiveness of the support by health workers on the global quality of life may be explained by the relatively small number of patients having this. On the contrary, nearly all the patients had emotional/cognitive social support and this may explain our results.

Finally, we found that marital and financial status, prior MI, and having difficulty in daily works due to cardiac symptoms are the main determinants for the quality of life in patients with coronary heart disease. Social support, especially tangible social support, may increase the effectiveness of their rehabilitation and psychosocial activity, thereby quality of life. In clinical decision-making, the goal is to integrate the results of health-related quality of life assessments with clinical decisions, and this underlines the need to evaluate whether the treatment given is congruent with the patient's quality of life. Effective public health interventions should be aimed at improving health-related quality of life and perceived health status in the CHD population, especially the most vulnerable groups.

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