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The role of psychological well-being, vital exhaustion and Type D personality in prediction of quality of life among patients with coronary heart disease in Ardabil city

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Abstract

The aim of the present study was to investigate the role of psychological well-being, vital exhaustion and Type D personality in prediction of quality of life among patients with coronary heart disease in Ardabil city.Participants were included 106 patients with coronary heart disease requiring coronary angiography. Psychological Well-being , Health-related Quality of Life , vital exhaustion and Type D Personality inventories were used in order to gathering data . Linear regressions were also used to analyze data. The linear regression model showed that significant baseline predictors for a change in the physical health related quality of life were psychological well-being and the baseline physical component of health related quality of life. Significant predictors of change in the mental health related quality of life were psychological well-being, vital exhaustion, and the baseline mental component of quality of life. socioeconomic status (SES) (education) and personality traits were not significant in predicting a change in quality of life among our patients. Psychosocial factors (psychological well-being, vital exhaustion) seem to be more important predictors of change in HRQOL compared with some objective medical indicators (ejection fraction) among patients with coronary disease.

Keywords: Psychological Features , Quality of Life , coronary heart disease

Introduction

Although cardiac mortality has decreased in most high-income countries in recent years, coronary heart disease (CHD) is still the leading cause of morbidity and disability of the population. Moreover, the overall decline in CHD rates has been uneven when comparing the countries of western Europe and the United States, where the decreasing mortality trends are clearly visible, with the countries of Eastern and Central Europe, where decline in cardiac mortality is less pronounced, or the countries of the former Soviet Union, where trends in cardiac mortality are increasing or unstable(Bobak et al,2015). Some of the decreases in mortality might be influenced by methodological issues. For instance, epidemiologic trends in the incidence of myocardial infarction (MI) could partially be due to an increased detection of small infarctions caused by the introduction of a troponin-based criterion into diagnostics (Studencan ,2008). However, the CHD rates in the countries of Eastern and Central Europe remain rather high compared with rates in Western European countries and the United States.

The focus of research on CHD is currently shifting toward quality of life among patients, and psychosocial factors are also becoming more important. This is partly because medically oriented treatment strategies have been developed over the past decades, and survival among patients with coronary disease has significantly improved. This has enabled many patients to live longer and better despite their disease. Quality of life has thus been increasingly considered as an important outcome measure in research focused on patients with CHD (Shephard , 2014).

A patient's quality of life is a complex, multidi- mensional construct comprising physical, mental, social, and economic components and can be influenced by various factors, including both medical and psychosocial parameters (Spilker, 2011). Because of the inconsistency in definition, it is often operationalized as perceived health status, self-rated health, or health- related quality of life (HRQOL). The present study used the Short Form-36 (SF-36) questionnaire as a measure of quality of life, which attempts to capture the subjective (self-perceived) health status of a patient as a reflection of his/her disease. The outcome parameter of the SF-36 is usually defined as HRQOL and can be used to evaluate the broad impact of a disease on a patient and the effectiveness of interventions aimed at mental and physical health (Ware , 2012). Recent research has shown HRQOL to be a construct of high clinical relevance, with HRQOL significantly predicting long-term mortality among patients with CHD (Lenzen ,2012). and short-term mortality after cardiac surgery, especially among older patients (Ho PM , 2008). Long-term mortality, readmissions, and cardiovascular events after invasive coronary procedures (CABG or percutaneous transluminal coronary angioplasty [PTCA]) among patients with CHD or heart failure have all been predicted by HRQOL (Murberg , 1999). Invasive coronary procedures (CABG or PTCA) usually lead to an improvement in both the physical and mental dimensions of HRQOL, but there is still a significant proportion of patients who do not improve or who even show a decline in HRQOL(Hunt ,2009). Hawkes and Mortensen(2008) concluded that predicting in advance which patients will benefit from therapy or intervention and which will not by investigating clinically significant intra-individual change standards in HRQOL may therefore be a relevant step. Evidence regarding deterioration in HRQOL is scarce, however, and most studies focused on predicting HRQOL after invasive coronary procedures analyze medical factors; thus, data on psychosocial factors as predictors of HRQOL after surgery are lacking. Medical predictors of HRQOL among patients with CHD include the severity of the disease, type of the intervention received, and functional status.The history of neurologic and psychiatric diseases, and other comorbidities, including peripheral vascular disease, chronic obstructive pulmonary disease, hypertension, and diabetes (Rumsfeld ,2004) are influencing HRQOL in patients with CHD. Socio demographic predictors of lower HRQOL in CHD include female gender, increased age, lower occupational status, and living alone (Bradshaw , 2006).

depression and anxiety, and the presence of post-MI depression is associated with increased risk of mortality and morbidity. Patients with high levels of post-MI depression are more likely to die of cardiac causes over the subsequent years and have a higher probability of nonfatal re infarction and other cardiac complications (Frasure-Smith ,2005). Other factors may also influence the prognosis of CHD. Vital exhaustion has been shown to be a predictor of increased risk for MI, coronary bypass surgery, need of revascularization, and cardiac death among patients with coronary disease

(Schuitemaker , 2009). In regard to personality traits, Type D personality was associated with a higher number of reinfarctions and higher mortality rates among patients with coronary disease, as well as impaired quality of life (Pedersen , 2011). Our aim was to identify psychological predictors of change in HRQOL among patients with CHD. The predictors of change in HRQOL were also assessed separately for any lack of improvement in HRQOL (ie, patients with a stable or worse HRQOL).We focused not only on the well-known characteristics traditionally associated with CHD, such as depression and anxiety (in our study represented by the term "psychologic well-being"), but also on the less commonly explored factors of vital exhaustion, Type D personality, and socioeconomic status (SES) (education).

Tables and Figures

Type of intervention after CAG	CABG	PTCA/stent	Pharmacotherapy	Total study
Total No. N (%)	41 (38.7%)	37 (34.9%)	28 (26.4%)	106 (100%)
Age, y				
Mean (SD)	59.4 (5.4)	55.8 (7.6)	56.8 (6.4)	57.4 (6.7)
Range	49-73	34-69	46-69	34-73
Gender				
Male	35 (85.4%)	30 (81.1%)	25 (89.3%)	90 (84.9%)
Female	6 (14.6%)	7 (18.9%)	3 (10.7%)	16 (15.1%)
Education				
Basic	8 (19.5%)	7 (18.9%)	12 (42.9%)	27 (25.5%)
Secondary	21 (51.2%)	23 (62.2%)	14 (50.0%)	58 (54.7%)
High	12 (29.3%)	7 (18.9%)	2 (7.1%)	21 (19.8%)
Functional status				
EF > 50%	16 (39.0%)	23 (74.2%)	13 (56.5%)	52 (54.7%)
EF 40%-50%	16 (46.3%)	6 (19.4%)	7 (30.4%)	32 (33.7%)
EF < 40%	9 (14.6%)	2 (44.4%)[a]	3 (13.0%)[b]	11 (11.6%)
Psychological well-				
Mean (SD)	27.7 (9.9)	29.1 (12.5)	25.4 (13.2)	27.7 (11.7)
Vital exhaustion				
Mean (SD)	18.4 (8.8)	20.7 (9.6)	21.6 (12.4)	20.1 (10.1)
Type D				
Type D	27 (34.1%)	20 (54.1%)	16 (57.1%)	63 (59.4%)
Non-Type D	14 (65.9%)	17 (45.9%)	12 (42.9%)	43 (40.6%)

CAG, coronary angiography; *CABG*, coronary artery bypass grafting; *PTCA/stent*, percutaneous plasty with or without stent; *EF*, ejection fraction; SD, standard deviation.
[a] Data on functional status are missing for 6 patients.
[b] Data on functional status are missing for 5 patients.

The mean age of participants in our study was 57.4 years (standard deviation = 6.7), and 15.1% were women. Most of the patients had a middle education (54.7%), whereas 25.5% of the participants had a basic education and 19.8% had a higher education. These characteristics were similar in all subgroups according to the type of intervention. Basic psychological and medical characteristics within the research groups are presented in Table 1.

Physical component of HRQOL								
Type of intervention (%)	Baseline Mean (SD)	Follow-up Mean (SD)	[a]Change Mean (SD)	*p* value	[b]Effect size	Patients improved (%)	Patients stable (%)	Patients declined
All (106)	48.3 (	57.2 (	9.1 (	.001	.68	40.6%	51.0%	8.3%
CABG (41)	46.6 (	59.1 (	11.4 (	.001	.94	42.1%	55.3%	2.6%
PTCA/stent	45.8 (	57.7 (	10.1 (	.008	.72	38.7%	51.6%	9.7%
Pharmacothera (28)	50.6 (	54.1 (	4.5 (	.207	.35	40.7%	44.4%	14.8%
Mental component of HRQOL								
Type of intervention (%)	Baseline Mean (SD)	Follow-up Mean (SD)	[a]Change Mean (SD)	*p* value	[b]Effect size	Patients improved (%)	Patients stable (%)	Patients declined
All (106)	58.5 (	65.2 (	7.7 (	.001	.55	35.8%	52.6%	11.6%
CABG (41)	58.9 (	65.9 (	8.1 (	.007	.67	35.1%	54.1%	10.8%
PTCA/stent	56.6 (	62.1 (	6.6 (	.035	.55	36.4%	48.5%	15.2%
Pharmacothera (28)	60.6 (	68.1 (	8.6 (	.009	.79	36.0%	56.0%	8.0%

CABG, coronary artery bypass grafting; *HRQOL*, health-related quality of life; *PTCA/stent*, angioplasty with or without stent; *SD*, standard deviation.
[a] Change between baseline and follow-up.
[b] Negative values for effect size between baseline and follow-up represent improved HRQOL; decreased HRQOL.

Table 2 shows the SF-36 summary scores (physical and mental component) at baseline and the follow-up for the total sample and for each subgroup according to the type of the intervention after CAG. For the physical component of the SF-36, statistically significant improvements were found among all groups of patients, except for patients indicated for pharmacotherapy, and in the mental component, significant improvements were found among all groups of patients (as indicated by P values and effect sizes in Table 2.

	Physical component of HRQOL		Menta component of HRQOL	
	b value	95% CI	b value	95% CI
Age	.01	(.57 to .49)	.07	(.49 to .46)
Gender	.04	(9.55 to 14.52)	.06	(7.50 to
Functional status	.08	(.53 to .24)	.04	(.43 to .29)
Intervention	.09	(3.01 to 7.00)	.04	(5.65 to
Education	.12	(2.93 to 9.49)	.03	(4.00 to
Psychological well-	L.35[b]	(L.95 to L.13)[b]	.36[a]	(L5.02 to
Vital exhaustion	.08	(.57 to .27)	.19[a]	(L.70 to
Type D	.13	(2.96 to 12.05)	.04	(6.26 to
Baseline HRQOL	L.66[c]	(L.88 to L.40)[c]	.78[b]	(L1.08 to
Total R^2 (adjusted)	.28		.21	

HRQOL, health-related quality of life; *CI*, confidence interval.
[a] $P < .05$, [b] $P < .01$, [c] $P < .001$. Statistically significant results are in bold.

The linear regression model showed that significant baseline predictors for a change in the physical HRQOL were psychological well-being and the baseline physical component of SF-36. Significant predictors of change in the mental HRQOL were psychological well-being, vital

exhaustion, and the baseline mental component of SF-36 (Table 3).SES and personality traits were not significant in predicting a change in HRQOL among our patients.

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