ORIGINAL ARTICLE

The Effect of Dimensions of Illness Perceptions on the Variation of Quality of Life in Patients With Coronary Artery Disease

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Abstract- According to previous studies in patients with Coronary artery disease (CAD), it is important to consider both medical conditions and psychological factors such as illness perceptions to explain differences in Health-Related Quality of Life (HRQoL). Patient's illness perception is formed based on Patient's beliefs and perceived information about their conditions, presumably influencing the individual's mental health and how the patients deal with the medical conditions. The objective of this study was to analyze the relationship between illness perception and quality of life in patients with CAD. In this cross-sectional study, 99 CAD patients filled out questionnaires, including the brief illness perception questionnaire, the Health-related quality of life scale (SF36). The data were analyzed using multiple linear regression.When corrected for confounders, identity ($\beta=-0.47$) was associated with Physical Component (PCS). Identity and age explained 53% of the variation in PCS (R2=0.53). Personal control ($\beta=0.20$), identity ($\beta=-0.23$) and Emotional response ($\beta=-0.25$) were associated with Mental Component (MCS). They explained 47% of the variation in the Mental Component (R2=0.47) domain. This study showed that there is a relationship between illness perception and quality of life in patients with CAD. Better HRQoL was found in patients who have a better understanding of the disease, experience better personal control, and have less of a physical and mental response. Results from this study provide starting points for the development of interventions focusing on illness perceptions to support CAD patients in their disease management and to improve HRQoL.

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Introduction

Coronary artery disease (CAD) is a progressive disease characterized by various symptoms and findings ranging from angina pectoris to sudden cardiac death, as a result of decreased blood flow due to the characteristics of CAD(1). CAD causes a negative impact on the physical, psychological, social, and occupational functionsof patients (2). The prevalence of CAD has increased sharply and manifested a younger trend. Although less than 10% of all individuals presenting with documented CAD are estimated in very young ages, it can have devastating consequences for these patients, their families, and society due to the high morbidity and long-term mortality (3).

Hypertension, diabetes, smoking, and dyslipidemia are established risk factors for CAD (4). Some of CAD risk factors, such as dyslipidemia and hypertension are affected by lifestyle. The spatial heterogeneity of coronary atherosclerosis could be explained on the basis of the risk factors such as lipoproteins and smoking, but these have global rather than thelocal effect on arteries (4). Three important aspects of quality of life are the physical, mental, and social aspects. The mental condition of the patients, as one of the aspects of quality of life (QoL) in therecovery period of bypass surgery, plays a pivotal role in the condition of other aspects including social performance as well as continuing work and activities (5). Moreover, the prevalence of other cardiovascular risk factors such as smoking, sedentary lifestyle, and obesity was found to be higher among diabetic compared to nondiabetic patients (6).

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The primary outcome of interest has traditionally been mortality, but now researchers are increasingly interested in thehealth-related quality of life (HRQoL). HRQoL is a subjective and multidimensional concept composed of a range of domains, including physical, social, emotional, mental, and functional health (B. Spilker (7,8). HRQoL is an important outcome in the management of patients with chronic diseases, such as CAD, when the main treatment aim is to reduce mortality rates, improve symptoms, and the ability to perform daily activities (9).

The previous studies indicate that self-efficacy, self-care health behaviors, and modifiable risk factors play an important role in QoL in adults with CAD. Managing cardiovascular risk factors is one of the most important healthy self-care behaviours that causing an efficient factor to have better quality of life. Motivating the patients to conduct healthy self-care behaviours is one of the nursing strategies in this population. (10); furthermore, others healthcare models, are progressively utilized to explain the diversities in quality of life in chronically ill patients. The models suppose the biological factors, similar to psychological and social factors, have a significantly imporant role in the determination of the quality of life in chronic illnesses (11,12).

Illness perceptions are the central concept of the Common Sense Model (CSM) (13,14). This model hypothesizes that individuals create mental representations of their illness on the basis of the concrete and abstract sources of information available to them, in order to make sense and manage the problem (14). Illness perception often does not match medical views but determine how people respond to their illness. These illness perceptions include beliefs about consequences, the timeline of the disease, the ability in controlling the disease, understanding of the disease, symptoms related to the disease and concerns and emotional response to the disease (13,15). These perceptions are considered key elements for understanding the ways that people attempt to manage threats to their health (13,14).

Negative IPs are reportedly associated with more complications after CAD (16), and various studies have indicated that perceptions of less negative illness consequences are associated with better clinical outcomes (17). Additionally, HRQoL is influenced by beliefs and perceptions that patients hold about their illness. Both illness perceptions and HRQOL are influenced by the information provided by the disease (18).

In this study, we attempted to analyze which specific dimensions of illness perceptions contribute to HRQoL. Investigation on these dimensions of illness perceptions in patients with CAD allows us to test the assumption ofthe timeline of the disease, ability to control the disease, ability to control the disease by treatment, symptoms, comprehensibility of the disease, emotional response and concerns are related to HRQoL.

Materials and Methods

Study design and participants

In this cross-sectional study, patients with CAD referred to the angiography ward of the Mostafa-khomeini hospital affiliated to shahed university were selected from the 1 April 2012 to the 28 June 2012. Before implementation, according to the patient's medical records, readiness of patients approved by the cardiologist from the diagnosis perspective and a short interview with the patients. The other inclusion criterias were no psyhciatric disorders and no history of psychiatric drugs. Lastly, 99 patients with CAD were included in the study.

The patients included in the study complied with the following criteria:summarized version of the illness perceptions questionnaire (IPQ) and SF-36 questionnaire.

Measures

Illness perceptions

The Brief Illness Perception Questionnaire (B-IPQ) (19) was used to assess the various dimensions of illness perceptions. The brief B-IPQ is more suitable than the extended B-IPQ version for the study as it takes less time to complete, less taxing, and easier and quicker form for the patients (20). By definition, B-IPQ has nine subscales designed for examining cognitive and affective envisage of the illness. All items are rated with a 10-point (1 to 10) response scale. Five of the subscales assess cognitive illness representations: consequences, illness timeline, and personal control over illness, curability and illness identity. Two assess emotional representations: worry about illness and emotional response. One assesses illness knowledge and Assessment of the causal representation by an open-ended response, which asks patients to list the three most important causal factors in their illness (21).

Table 2 represents the dimensions of the scores and means. A higher score on these dimensions indicates that patients who believed in a stronger effect of illness upon daily life (“consequences”), kept stronger belief in a chronic time course (“timeline”), had more perceived personal control of disease (“personal control”), more perceived control of the illness by treatment ("treatment control”), and more experience of severe symptoms as a result of the disease (“identity”). Two of the items assess emotional perceptions of illness. A higher score indicates that patients had more emotions of concern about the illness (“concern”) and stronger emotional response to the illness (“emotional response”). One item was related to the" comprehensibility" that higher score means a more knowledge about the illness. One open-ended item assesses causal beliefs about CAD. This item asks patients to list their views on the three most important causal factors of their illness.

The reliability coefficient of this questionnaire by test-retest method for each of subscales was from r=0.48 (understanding) to r=0.70 (consequences) (22). Cronbach’s alpha of Persian version was 0.84,and its correlation coefficient with R-IPQ Persian version was0.71. The results showed that Persian version of this scale had indicated its good and satisfactory validity (23).

Health-related quality of life

Quality of life (QoL) was evaluated using the 36-Item Short Form Health Survey (SF36), that is a validated form, well-documented, and widely used. It included both a physical and mental component summary (PCS and MCS), reflecting physical and mental health. Short form 36 health survey is a generic test that measures QoL through the perception of health by the patient.Higher scores indicate less impairment in the QoL.It contains 36 items in 8 subscales general health, bodily pain, physical functioning, physical role limitation, vitality, mental health, social functioning, and mental role limitation. The Scoring of each domain was calculated independently and scores ranged from 0 (the worst) to 100 (the best). Higher scores indicate better health. Validation study of the Turkish version of SF-36 has been performed. A study on Iranian sample reported Cronbach’s alpha coefficients for all subscales in the range of 0.70 to 0.85. Then to verify thetest-retest reliability of SF-36, the test was run after a week on 120 cases of the people who formerly completed the questionnaires,and the result for subscales was 0.43 to 0.79. The validity of this questionnaire reported there was a significant difference between all subscales in two groups of healthy people and patients (23).

Analyses

Descriptive statistics were used to present patients’ backgrounds, medical characteristics and their causal beliefs about CAD.

Linear regression was performed to quantify the associations between illness perceptions and HRQoL. General subscales of quality of life, physical and mental health wereconsidered as response variables and illness perception considered as predictor variable.

First, a crude model with the 8 specific dimensions of illness perceptions (model 1) was analyzed. In the Second model (model 2), illness perceptions were corrected for the confounders of age and gender. In the third model (model 3), illness perceptions were adjusted for demographic factors (age and gender) and disease-related factors. In the regression models, the standardized βs were used to compare the strength of the various independent variables. The adjusted explained variance (adjusted R2) per model was then analyzed. All analyses were performed with the Statistical Package for the Social Sciences (SPSS 23.0 for Windows).

Results

Sample characteristics

Disease related-demographic characteristics of patients are presented in table 1. A total of 99 CAD patients, with the mean age of 59.7 (age range, 20 - 86) were entered and 58 cases (58.6%) were males. approximately half of the patients (41.3%) had precedent cardiovascular disease history. Most of the patients had a low educational level (74.8%), and 31.3% of patient were cigarette-user. Twenty-five percent of the study sample suffered from diabetes mellitus,and47 percent of the study sample suffered from hypertension.

Illness perceptions and HRQoL

Descriptions of illness perceptions (B-IPQ), Health-relatedQoL (SF36) are presented in table 2. Social functioning between subscales of QoL had thehighest mean (75.88), and Physical Functioning had lowest mean (23.08). Also,treatment control in illness perceptions had upper most mean (6.97), and Identity had thelowest mean (3.41). Results of multiple linear regression models in predicting health-related QoL (PCS and MCS) by illness perception subscales are presented in tables 3 and 4.

As shown in table 3 the crude regression model, consequences (β=-0.18) and identity (β=-0.52) were associated with Physical Component Summary (PCS) as measured by the 36-Item Short Form Health Survey (SF36). When corrected for the confounders of age and gender (model 2), identity (β=−0.47), was associated with PCS. Also in model 3 that corrected for the confounders, identity ($\beta=-0.47$) and age ($\beta=-0.29$) were associated with PCS. Identity and age explained 53% of the variation in HRQoL in model 3 (R2=0.53). Diabetes mellitus (DM) and smoking history were not associated with the health-relatedQoL (SF36). These results indicated that CAD patients with weaker perceptions of the identity of the disease have better PCS.

Table1. Disease related-demographic characteristics of patients

Variable	N=99	N (%)
Gender	Male	58(58.6)
	Female	41(41.4)
Age	Mean±SD	59.7±11.5
	<50	19(19.2)
	50-60	31(31.3)
	60-70	25(25.3)
	>70	24(24.2)
Educational level	illiterate	57(57.6)
	Elementary	17(17.2)
	Diploma	16 (16.2)
	College	8(8.1)
HTN	Yes	47(47.5)
	No	52(52.5)
DM	Yes	25(25.3)
	No	74(74.7)
Smoking history	Yes	31(31.3)
	No	68(68.7)
Cardiovascular disease history	Yes	41(41.3)
	No	58(58.6)

Abbreviations: DM, diabetes mellitus; HTN, Hypertension

Table 2. Descriptions of illness perceptions (B-IPQ), health related quality of life (SF36)

N=99	Variable	Mean±SD	Range
Health-related quality of life (HRQOL)	Physical Functioning (PF)	23.08±6.29	10-30
	Role-Physical (RP)	34.59±46.11	0-100
	Bodily Pain (BP)	64.37±26.89	10-100
	General Health (GH)	58.50±18.19	5-100
	Vitality (VT)	55.50±23.80	0-100
	Social Functioning (SF)	75.88±33.08	0-100
	Role-Emotional (RE)	46.12±40.60	0-100
	Emotional well-being	58.58±19.64	16-100
	Physical Component (PCS)	45.14±20.55	11.7-82.5
	Mental Component (MCS)	59.02±22.08	13.1-98
Illness perception	Consequences	4.86±3.01	0-10
	Timeline	4.97±3.31	0-10
	Personal control	4.96±2.19	1-10
	Treatment control	6.97±2.04	2-10
	Identity	3.41±2.34	0-8
	Concern	5.06±2.63	0-10
	Understanding	5.09±2.65	0-10
	Emotional response	4.59±2.34	0-10

Table 3. Multiple linear regression models in predicting Health-related quality of life (PCS) by illness perception subscales (N=99)

		Physical Component Summary (PCS)		
		Model1 (Block 1)	**Model2 (Block 1 ,2)**	**Model3 (Block 1,2,3)**
Block 1: Perceptions		**B**	**B**	**B**
Consequences		-.18*	-.13	-.13
Timeline		.02	.05	.05
Personal control		.04	.11	.12
Treatment control		-.002	.01	.007
Identity		-.52***	-.47***	-.47***
Concern		-.02	-.037	-.04
Understanding		.04	-.09	-.09
Emotional response		-.15	-.15	-.16
Block2:Demographic factors	**Age**		-.302***	-.29***
	Gender(male)		.164*	.14
Block3:disease related factors	**DM**			-.06
	Smoking History			.05
Model	**F**	10.6*	12.4*	10.3*
	R^2	.44	.54	.532

R2 is an adjusted R2. B is a standardized β. **P* ≤ 0.05; ** *P* ≤ 0.01; *** *P* < 0.001.

Table 4. Multiple linear regression models in predicting health-related quality of life (MSC) by illness perception subscales (N=99)

		Mental Component Summary (MCS)		
Block 1: Perceptions		**B**	**B**	**B**
Consequences		-.18*	-.13	-.13
Timeline		-.06	-.03	-.03
Personal control		.11	.19*	.20*
Treatment control		-.05	-.03	-.04
Identity		-.29**	-.23*	-.23*
Concern		-.03	-.04	-.04
Understanding		.12	-.03	-.03
Emotional response		-.24*	-.25*	-.25*
Block 2:Demographic factors	**Age**			
	Gender(male)			
Block3:disease related factors	**DM**			-.06
	Smoking History			.008
Model	**F**	7.5*	-.34***	-.34***
	R^2	.35	.20*	.19*

R2 is an adjusted R2. B is a standardized β. **P* ≤ 0.05; ** *P* ≤ 0.01; *** *P* < 0.001

As shown in Table 4 (model 1), consequences (β=−0.18), identity (β=−0.29) and emotional response (β=−0.24) were associated with Mental Component Summary (MCS). Therefore, the results in model2 and model3 were similar. When adjusted for confounders of DM, smoking history, age, and gender (Table 4, model 3), Personal control (β=0.20), identity (β=−0.23), Emotional response (β=−0.25) , age (β=−0.34) and gender (β=0.19) were associated with Health-related Mental Component Summary (MCS). Personal control, identity, Emotional response,gender and age explained 47% of the variation in the MCS (R2=0.47). These results indicated that CAD patients with weaker perceived identity, more perceived personal control and weaker emotional response and less age had better MCS as measured by the SF36.

Discussion

The present investigation showed that an illness perception plays an important role in HRQoL. Better physical and mental health factorswas observed in CAD patients; CAD patients represented higher beliefs about control of their treatment and a greater understanding of the disease (comprehensibility), when experiencing fewer CAD-associated symptoms (identity), the least impact on their daily life (consequences), and fewer emotional consequences (emotional response). Identity and age explained 53% of the PCS variation (SF36), while personal control, identity, emotional response and gender explained 47% of the MCS variation. Our findings were in agreement with studies carried out on illness perceptions in patients with CAD. In a study, Foxwel*et al*., showed that outpatient CAD patients have worse general functioning and HRQoL (25). Consistent with our study, Goodman*et al*., reported that decreased symptoms, more positive beliefs,and less strong emotional reactions are associated with higher HRQoL (17). While some studies pointed to the relationship between illness perceptions and the overall outcome of the illness using coping with illness (14), Heijmans*et al*., (26,27) indicated that illness perceptions have more impacts on HRQoL than coping strategies. Our study is in the line with the Common Sense Model (CSM) (16), in that everybody has views and beliefs about his/her illness associated with HRQoL. Understanding how people manage threats to their health and experience their HRQoL requires such illness presentations (13).

As a limitation ofour study, the associations between the dimensions of illness perceptions and HRQoL could not be fully understood. Addressing the possibility of conceptual overlap between the specific dimensions of illness perceptions and HRQoL can circumvent such an issue. The low correlations between the illness perception dimensions and the HRQoL in our study made difficult collinearity determination. The relationship between illness perceptions and HRQoL can be explained in details by longitudinal data.

The second limitation was the small size of βs in the regression models; this points to small clinical changes per unit change.

All measures used in this study were questionnaires. However, it should be determined if questionnaires are the best measure of illness perceptions, due to unconscious processes of perception development. Nonetheless, it is important to note that, according to our study, regression analysis was the method of choice. However, patient-reported outcome, which determines illness perceptions (B-IPQ) (19,28) and HRQoL (25), is valid and reliable.

This study highlights the importance of patients' beliefs about their illness and symptoms in relation to HRQoL. The results of this study indicated that the illness perceptions of CAD patients are associated with HRQoL together with the severity of hypertension as experienced by patients. More objective measures, such as smoking history and DM measures did not add to the explanation of HRQoL.

The aim of CAD treatment is improvement of HRQoL; the present study aimed to assess the relationship between illness perceptions and HRQoL. Patients' beliefs as well as views of their symptoms and illness, although being important, were not fully discussed in consultations (15). Our findings not only confirmed the pre-existing knowledge but also identify novel starting points to develop interventions with illness perceptions; these can support CAD patients in the management of their disease, as well as lead to HRQoL improvement. We realized that realistic positive beliefs and negative beliefs should be encouraged, and prevented or challenged, respectively (25,30,31). This may lead to better HRQoL in patients with CAD. Because of the fact that illness perception-focused interventions have been recently defined in patients with other chronic diseases (32,33), development and assessment of an illness perception intervention should be carried out for CAD patients in primary care settings.

References

1. Napoli C, Glass CK, Witztum JL, Deutsch R, D'Armiento FP, Palinski W. Influence of maternal hypercholesterolemia during pregnancy on progression of early atherosclerotic lesions in childhood: Fate of Early Lesions in Children (FELIC) study. Lancet 1999;354:1234-41.
2. RogerVL, GoAS, Lloyd-JonesDM, BenjaminEJ, BerryJD, BordenWB. Heart disease and stroke statistics. 2012 update: a report from the American Heart Association. Circulation 2012;125:e2-220.
3. Lemelin ET. Lifecourse socioeconomic position & cardiovascular health. ProQuest; 2008. (Accessed January 2018, 12, at https://search.proquest.com/docview/304575433?pq-igsite=gscholar).
4. Verma SK, Kumar B, Bahl VK. Aorta-ostial atherosclerotic coronary artery disease—Risk factor profiles, demographic and angiographic features. Int J Cardiol Heart Vasc 2016;12:26-31.
5. Lukarinen H. Life course of people with coronary artery disease. J Clin Nurs 1999;8:701-11.
6. Turner RC, Millns H, Neil HA, Stratton IM, Manley SE, Matthews DR, et al. Risk factors for coronary artery disease in non-insulin dependent diabetes mellitus: United Kingdom Prospective Diabetes Study (UKPDS: 23). BMJ 1998;316:823-8.
7. Spilker B, editor. Quality of life and pharmacoeconomics

in clinical trials. Philadelphia: Lippincott-Raven, 1996.

8. Staniūtė M, Vaškelytė J, Rumbinaitė E, Kaminskaitė B, Samsanavičienė S, Plungienė S, et al. Impact of left ventricular function on health-related quality of life in coronary artery disease patients. J Medi Clin 2015;1:233-9.
9. McGee HM, Oldridge N, Hellemans IM. Quality of life evaluation in cardiovascular disease: a role for the European Society of Cardiology. Eur J Cardiovasc Prev Rehabil 2005;12:191-2.
10. SukheeAhn, RN, Rhayun Song, RN, Si Wan Choi. Effects of Self-care Health Behaviors on Quality of Life Mediated by Cardiovascular Risk Factors Among Individuals with Coronary Artery Disease: J Asian Nurs Res 2016;10:158-63.
11. Ridder D, Geenen R, Kuijer R, Middendorp H. Psychological adjustment to chronic disease. Lancet 2008;372:246-55.
12. Moss-Morris R. Adjusting to chronic illness: time for a unified theory. J Health Psychol 2013;18:681-6.
13. Leventhal HL, Brissette I, Leventhal EA.Common-Sense Model of self-regulation of health and illness.In: The Self-Regulation of Health and Illness Behavior. Cameron LD, Leventhal H, eds. London: Routledge, 2003:42-65.
14. Hagger MS, Orbell S. A meta-analytic review of the common-sense model of illness representations. J Psychol Health 2003;18:141-84.
15. Petrie KJ, Weinman J. Why illness perceptions matter. Clin Med 2006;6:536-9.
16. Le Grande MR, Elliott PC, Worcester MU, Murphy BM, Goble AJ, Kugathasan V, et al. Identifying illness perception schemata and their association with depression and quality of life in cardiac patients. Psychol Health Med 2012;17:709-22.
17. Goodman H, Firouzi A, Banya W, Lau-Walker M, Cowie MR. Illness perception, self-care behaviour and quality of life of heart failure patients: a longitudinal questionnaire survey. Int J Nurs Stud 2013;50:945-53.
18. Husson O, Mols F, van de Poll Franse LV. The relation between information provision and health-related quality of life, anxiety and depression among cancer survivors: a systematic review. Ann Oncol 2011;22:761-72.
19. Broadbent E, Petrie KJ, Main J, Weinman J. The brief illness perception questionnaire. J Psychosom Res 2006;60:631-7.
20. Moss-Morris R, Weinman J, Petrie K, Horne R, Cameron L, Buick D. The revised Illness Perception Questionnaire (IPQ-R). J Psychol Health 2002;17:1-16.
21. American Psychiatric Association (APA), editor. Diagnostic and Statistical Manual of Mental Disorder. 4th ed. New York: American Psychiatric Association, 1994.
22. Broadbent E, Petrie KJ, Main J, Weinman J. The brief illness perception questionnaire. J Psychosom Res 2006;60:631-7.
23. Bagherian R, Bahrami Ehsan H, Saneei H. Relationship Between History of myocardial Infarction and Cognitive Representation ofMyocardial Infarction. J Res Psychological Health 2008;2:29-39.
24. AsghariMoghaddam M, Faghihi S. Validity and reliability of health survey questionnaire (SF-36) in two Iranian sample. J Daneshvare Raftar 2004;10:1-10.
25. FoxwelR, Morley Ch and Frizele D. Illness perceptions, mood and quality of life: A systematic review of coronary heart disease patients Conclusion, J Psychosomatic Res 2013;75:211-22.
26. Heijmans MJ. Coping and adaptive outcome in chronic fatigue syndrome: importance of illness cognitions. J Psychosom Res 1998;45:3-51.
27. Heijmans MJ. The role of patients’ illness representations in coping and functioning with Addison’s disease. Br J Health Psychol 1999;4:137-49.
28. Hallegraeff J, van DS, Krijnen W, de Greef MHG. Measurement of acute nonspecific low back pain perception in primary care physical therapy: reliability and validity of the brief illness perception questionnaire. BMC Musculoskelet Disord 2013;14:53.
29. Heijmans M, Foets M, Rijken M, Schreurs K, Ridder D, Bensing J. Stress in chronic disease: do the perceptions of patients and their general practitioners match? Br J Health Psychol 2001;6:229-42.
30. deRidder DTD, Theunissen NCM, van Dulmen SM. Does training general practitioners to elicit patients’ illness representations and action plans influence their communication as a whole? Patient Educ Couns 2007;66:327-36.
31. Pietrabissa G Sorgente A, Castelnuovo G. Integrating Motivational Interviewing with Brief Strategic Therapy for Heart Patients. J ProcediaSocial Behav Sci 2015;165:136-43.
32. Jansen DL, Heijmans M, Rijken M, Kaptein AA. The development of and first experiences with a behavioral self-regulation intervention for end-stage renal disease patients and their partners. J Health Psychol 2011;16:274-83.
33. Stafford L, Berk M, Jackson HJ. Are illness perceptions about coronary artery disease predictive of depression and quality of life outcomes? J Psychosomatic Res 2009;66:211-20.