Sense of coherence as a mediator between hostility and health-related quality of life among coronary heart disease patients

Barbora Silarova, PhD [a],[*],[1], Iveta Nagyova, PhD [a],[b], Jaroslav Rosenberger, PhD, MD [a], Jitse P. van Dijk, PhD [a],[c], Sijmen A. Reijneveld, PhD, MD [c]

[a] Graduate School Kosice Institute for Society and Health, Faculty of Medicine, Safarik University, Tr. SNP 1, 040 11 Kosice, Slovak Republic
[b] Department of Social and Behavioural Medicine, Faculty of Medicine, Safarik University, Tr. SNP 1, 040 11 Kosice, Slovak Republic
[c] Department of Community and Occupational Medicine, University Medical Center Groningen, University of Groningen, Antonius Deusinglaan 1, 9713 AV Groningen, The Netherlands

ARTICLE INFO

ABSTRACT

Objectives: To explore the association between hostility and health-related quality of life (HRQoL) among coronary heart disease (CHD) patients, and whether these associations are mediated by sense of coherence (SOC).
Background: Intervention research has shown that a decrease in levels of hostility leads to an increase of HRQoL among individuals with CHD. However, the mechanisms that link hostility and HRQoL in CHD patients are not clear.
Methods: 509 CHD patients (mean age 58.8 ± 7.3, 29.3% female) were examined.
Results: Hostility was associated with poorer mental HRQoL. Adding SOC to the model weakened the strength of the association between hostility and mental HRQoL. The effect of hostility on mental HRQoL was explained for 61.9% by SOC. Neither hostility nor SOC was associated with physical HRQoL.
Conclusions: Our findings indicate that low SOC may partially explain the adverse effect of hostility on low mental HRQoL in CHD patients.

Introduction

Coronary heart disease (CHD, also called ischaemic heart disease) remains the leading cause of death in Europe with significant differences in mortality rates between countries. Death rates from CHD are generally higher in Central and Eastern Europe than in Northern, Southern and Western Europe.[1] Therefore both clinicians and policy makers need to be aware of these differences between countries. Their decisions concerning prevention and treatment of CHD should rely on the data collected in a specific country or area.

Along with the increased importance of prevention, health-related quality of life (HRQoL) has gained attention and become an important outcome in patients with CHD.[2–4] For example, poor HRQoL has been shown to be independently associated with both onset and progression of CHD.[5–7] HRQoL is at present recognised as a clinically relevant construct useful for assessment of the impact of CHD on patient, the effectiveness of interventions and the risk for future CHD.

Hostility, among many psychosocial factors, has been studied regarding its role in the aetiology and prognosis of CHD.[8,9] In general, hostility may be characterised as a negative orientation toward interpersonal transactions and includes traits such as cynicism, anger, mistrust and aggression.[10] Recent meta-analyses have shown that the combined estimate for anger and hostility was associated with a modest but significant 19% increase in CHD incidence in initially healthy populations (25 studies) and a 24% increase in recurrent CHD events in patients with pre-existing CHD (19 studies).[11] Intervention research has shown that a decrease in levels of hostility leads to an increase of HRQoL after an acute heart attack and after cardiac surgery.[12–14] However, the mechanisms that link hostility and HRQoL in CHD patients are not clear.[15]

One of the mechanisms linking hostility and CHD outcomes including HRQoL may be sense of coherence (SOC) via its impact on coping.[15,16] According to Antonovsky,[17–19] high SOC enables a

person to react with flexibility to demands and to activate the appropriate resources for specific situations. SOC is postulated to have three components: comprehensibility, manageability and meaningfulness. A link between hostility and HRQoL via SOC is likely, as the levels of SOC stabilise during adulthood and may be shaped by the levels of hostility which usually develop during childhood.[17–19] A study conducted among 841 females[16] showed that hostility predicted low SOC at 3-years follow-up, which in turn predicted sick leave taken by employee (1–3 years later) and self-rated health (4 years later). Another study[15] conducted among 774 hypertensive participants showed that the association between cynicism, the cognitive component of hostility and HRQoL was totally accounted for by SOC.

The number of studies on hostility and SOC among CHD patients is limited, and studies on the mediating role of SOC between hostility and HRQoL are entirely lacking based on data collected in Central or Eastern Europe. Thus, this study aimed to explore the association between hostility and HRQoL among CHD patients, and whether this association is mediated by SOC crude and adjusted for potentially confounding sociodemographic and clinical variables. Potential confounders were age,[20–22] sex[20,23] and functional status.[24]

Methods

Sample and procedure

We recruited participants from the East Slovakian Institute for Cardiac and Vascular Diseases in Kosice, as part of the ongoing, observational study 'Social class and its impact on patients' functional status and recovery process' that investigates health differences between the Roma and non-Roma population. Participants were potentially eligible if they were referred for coronary angiography (CAG) by their cardiologist and aged less than 75 years at the time of enrolment. Additionally, they were excluded if they have a diagnosis of severe cognitive impairments in the medical history (e.g. dementia of the Alzheimer's type, vascular dementia, amnestic disorders), a diagnoses of psychiatric disorders in the medical history (e.g. substance-related disorders, schizophrenia and other psychotic disorders or mood disorders including depressive disorder and bipolar disorder), cardiovascular problems other than CHD (e.g. valve disease), a normal CAG and a serious co-morbidity (such as malignancies and nervous system diseases).[25–27] All data were collected the day before the CAG during participants' hospitalisation. Sociodemographic data were collected via an interview conducted by a psychologist or trained research assistant. Medical data were retrieved from the medical records, and patients also completed self-administered questionnaires on hostility, SOC and HRQoL. For the purpose of this study, we used baseline data collected among non-Roma patients.

Between November 2004 and December 2012 approximately 5000 patients scheduled to undergo CAG, mostly living in eastern Slovakia, satisfied the inclusion criteria for this study. Out of these, we randomly selected 762 potential participants after pre-stratification by socioeconomic status (measured by educational level: low, middle, high) to obtain equal numbers per stratum.

The study was approved by the Ethics Committee of the East Slovakian Institute for Cardiac and Vascular Disease in Kosice in November 2004. All participants were provided with information about the study and all signed an informed consent statement prior to the study. Participation in the study was fully voluntary and anonymous, with no incentives provided for participation. The investigation conforms with the principles outlined in the Declaration of Helsinki.[28]

Measures

We used the 27-item Cook-Medley hostility scale (CMHS)[10] to assess hostility. This scale is a shorter form of the original 50-item Cook-Medley hostility scale.[29] The 27-item CMHS comprises of three subscales: cynicism, hostile affect and aggressive responding reflecting the cognitive, behavioural and mood components of hostility. Barefoot et al[10] showed that the combination of these three subscales was better predicting mortality than any individual subscale of the original CMHS. Each item was rated on a dichotomised scale (1 = "true", 0 = "false"). We calculated the total sum score, with a higher score indicating a higher level of hostility. The validity and internal consistency of the CMHS were high.[10] In the present study, Cronbach's alpha was 0.71.

We assessed SOC using the 13-item Orientation to Life Questionnaire (OLQ).[17] The questionnaire consisted of three sub-dimensions: meaningfulness (e.g., Do you have the feeling that you don't really care about what goes on around you?), comprehensibility (e.g., Do you have the feeling that you are in an unfamiliar situation and don't know what to do?) and manage-ability (e.g., How often do you have feelings that you're not sure you can keep under control?). Each item was rated on a 7-point Likert scale (1 = never, 7 = always). Negatively-worded items were reverse-coded. We calculated the total sum score, with a higher score indicating a stronger SOC. The validity and internal consistency of the OLQ were high.[19,30] In the present study, Cronbach's α was 0.74.

We measured HRQoL with the Short Form Health Survey Questionnaire (SF-36). The SF-36 scale was used internationally as a generic measure of self-reported physical and mental HRQoL.[31] It consists of 36 items covering eight primary dimensions of subjective health perceptions. These included physical functioning, role limitations due to physical problems, bodily pain, general health perceptions, vitality, social functioning, role limitations due to emotional problems and mental health. Subscale scores and summary scores (the mental component summary − MCS and the physical component summary − PCS) were calculated using published algorithms[31] in which higher scores indicated better functioning. We used means, standard deviations and weights from the general U.S. population. The SF-36 scale was well tested and had satisfactory psychometric properties and international compara-bility, also among cardiac patients.[32]

Age was divided in this study into two groups, using median age (59.0 years) as the cut-off: 32−59 and 60−75.

Severity of CHD was defined by functional status. Functional status was assessed by a cardiologist based on 2 scales: the NYHA − 4 classifications according to the New York Heart Association classification of dyspnoea symptoms,[33] and the CCS − 4 classifications identifying the severity of chest pain according to the Canadian Cardiovascular Society.[34] In both scales, a higher score represents a worse functional status. In this study functional status was calculated using both scales in such a way that the worst score on either of these two scales was used to define the severity of CHD.

In the present study, all questionnaires were administered in Slovak language. The process of translation was based on published guidelines for translation and cultural adaptation of self-report measures.[35] As a first step, two people translated questionnaires independently from each other from English into Slovak language (forward translation). Next, the translation resulting from previous step was given to two translators whose mother tongue was English without an access to the original questionnaire. Both translators were asked to translate back the questionnaire from Slovak language to English (backward translation). Final changes in the translated version were then made accordingly.