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## SENSE OF COHERENCE AS A PREDICTOR OF PHYSICAL AND PSYCHOSOCIAL HEALTH AMONG CARDIAC PATIENTS

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### Summary

**INTRODUCTION:** According to salutogenic concept, a strong sense of coherence is associated with physical and psychological health. Global life orientation is a measure of an individual's ability to balance needs and resources of the body in confrontation with stress.

**AIM OF THE STUDY:** The aim of the present study was to assess relationship between sense of coherence (SOC) with health-related quality of life (HRQoL), especially with physical (PC) and mental (MC) component of health in patients undergoing cardiac treatment.

**MATERIAL AND METHODS:** 144 patients in age of 40-84 (mean age:  $63,35 \pm 10,71$  years) were examined. The following scale were used: SOC-29 (*Sense of Coherence*) and SF-36 (*Short Form Health Survey*). Statistical analyses included perform descriptive statistics, calculate correlation between variables and comparison in groups. Levels of  $p < 0,05$  were accepted as being statistically significant values.

**RESULTS:** The median score for SOC and its individuals components were as follows: SOC: 121,50; sense of comprehensibility: 46,00; sense of meaningfulness: 40,00; sense of manageability: 39,00. Correlation between SOC and all components with MC were noted ( $0,20 < r < 0,30$ ;  $p < 0,02$ ). In case of PC, correlations were weaker ( $0,17 < r < 0,23$ ), but statistically significant ( $p < 0,05$ ). Differences between group with low and strong SOC revealed in factors: physical functioning, role limitations due to physical health, pain, health-general, energy/fatigue, role limitations due to emotional problems as well as in MC and PC components ( $0,0000 < p < 0,0393$ ).

**CONCLUSIONS:** Sense of Coherence has an impact both for MC as well as PC. Strong SOC is associated with better HRQoL.

**KEY WORDS:** Sense of coherence, SOC-29, health-related quality of life, cardiac patients.

## **INTRODUCTION**

The concept of sense of coherence (SOC) was put forward by Aaron Antonovsky to explain why some people become ill under stress and others stay healthy. According to him, SOC is a global orientation that expresses the extent to which one has a pervasive, enduring though dynamic feeling of confidence that: (1) the stimuli, deriving from ones internal and external environment in the course of living are structured, predictable and explicable; (2) the resources are available for one to meet the demands posed by these stimuli; (3) these demands are challenges, worthy of investment and engagement. Thus, SOC consist of three main components: sense of comprehensibility, sense of manageability and sense of meaningfulness. [1,2].

Having a strong SOC is considered as a major coping resource for maintaining good health. Coping includes the ability to mobilise resources in order to manage the situation as well as the ability to regulate emotions in the situation [3]. Therefore, individuals with a strong SOC, relative to those with a weak SOC, are more likely to define stimuli as non-stressors, to assume that they will adapt automatically to the demand and have more confidence in their ability to victory over stressors [2,4]. Because of this, SOC seems to be more than just a coping approach, but also a factor that leads an individual to engage in healthy behaviors [4].

There exists no universally accepted definition of quality of life (QOL) in literature. Various definitions say, that the QoL is a personal well-being or satisfaction with life [5] as well as positive mental health [6], physical and material well-being, relations with other people, personal development and fulfilment [7], a degree of goodness [8] and is related to health (HRQOL). Based on the salutogenic theory, "QoL is the total existence of an individual, a group or a society describing the essence of existence as measured objectively and perceived subjectively by the individual, group or society" [9]. This concept combines the global, external, interpersonal and personal resources of an individual, group or society [9,10].

Although numerous studies have reported positive relationships between SOC and HRQOL [11-13], to my knowledge only three study has examined the relationship between SOC and HRQOL among cardiac patients [14-16]. Based on a review of the previous research, the objectives of the present study were: (1) to add new knowledge about SOC; (2) to evaluate SOC level and QoL in patients undergoing cardiac treatment; (3) to determine relationships between SOC

and QoL, especially in physical and mental SF-36 subdimensions.

## **MATERIAL AND METHODS**

During a 8 months period (1 november 2014 – 30 June 2015) cardiac patients during their hospital stay at Upper-Silesian Medical Center in Katowice were included in this study. The patients received verbal information about the study and they gave their consent.

### **Participants**

134 cardiac patients (mean age: 63,35 ± 10,71 years; 55,97% males) were examined. Criteria of exclusion from study were as follows: severe cognitive impairment, sight loss, that made impossible complete the survey and refusal to participate.

### **Measures**

Two measures were used in this study: The Sense of Coherence Scale (*SOC-29*) and SF-36 (*36-item Short Form Health Survey*).

SOC-29 was used to estimate the patient's sense of coherence. Each of 29 items were rated on a 7- point scale (1=never, 7=always). A higher SOC score indicates better capacity to respond adequately to stressful situations [17,18]. In original version, Antonovsky did not define boundaries for a normal and low SOC, but only talked about high and low SOC [17]. In the present study, SOC was recoded as a binary variable, where a score of 1 or 2 represents strong SOC and a score of 3–7 was a weak SOC. The validity and internal consistency of the questionnaire was high [19].

The SF-36 questionnaire was developed in the USA for use in the Rand Corporation Health Insurance Experiment [20]. 36 item questionnaire measures quality of life across eight domains, which are both physically and emotionally based. Following domain are assessed: physical functioning, role limitations due to physical health, role limitations due to emotional problems, energy/fatigue, emotional well-being, social functioning, pain, general health. Each of the eight domains of the SF-36, measures an aggregate percentage score. The percentage scores range from 0% (lowest or worst possible level of functioning) to 100% (highest or best possible level of functioning) [21,22].

### **Statistical analysis**

All statistical analyses were performed using the statistical software STATISTICA StatSoft 10.0. Descriptive statistics: mean (M), median (Me) and standard deviation (SD) were performed. Differences between groups were assessed using the nonparametric Mann-Whitney U test. Pearson's correlation coefficient (r) was used for correlation analysis. A 5% significance level was applied in the statistical tests.

## **RESULTS**

The table 1 presents descriptive statistics of the sense of coherence of 134 respondents. In detailed results, highest scored were reported in sense of comprehensibility (mean 47,30; SD 7,94) and the lowest in sense of meaningfulness (mean 40,36; SD 7,16). Baseline values of health-related quality of life were demonstrated in table 2.

**Table 1. SOC-29: sense of coherence – descriptive statistics**

SOC – 29 components	<b>M</b>	<b>Me</b>	<b>SD</b>
Sense of comprehensibility	47,30	46,00	7,94
Sense of manageability	40,64	40,00	8,75
Sense of meaningfulness	40,36	39,00	7,16
<b>Sense of Coherence</b>	<b>124,00</b>	<b>121,50</b>	<b>16,22</b>

**Notes:** M – mean; Me – median; SD – standard deviation

**Table 2. SF-36: Health self-assessment – descriptive statistics**

<b>Health components and factors</b>	<b>M</b>	<b>Me</b>	<b>SD</b>
physical functioning	58,50	59,00	25,60
role limitations due to physical health	38,45	38,00	24,89
pain	42,80	43,00	15,84
general health	34,21	35,00	13,88
<b>Physical Component of health [PH]</b>	<b>43,49</b>	<b>45,00</b>	<b>19,98</b>
emotional well-being	54,78	54,00	26,94
energy / fatigue	46,00	47,00	18,72
role limitations due to emotional problems	61,18	61,00	23,59
social functioning	60,54	62,00	24,57
<b>Mental Component of health [MC]</b>	<b>55,62</b>	<b>57,00</b>	<b>27,43</b>

**Notes:** M – mean; Me – median; SD – standard deviation

In Table 3 summarizes differences between patients with strong and low SOC, in the context of SF-36 health components and factors.

**Table 3. SF-36: Health self-assessment – descriptive statistics**

<b>Health components and factors</b>	<b>Mean ± SD</b>		<b>p</b>
	<b>Low SOC</b>	<b>Strong SOC</b>	
physical functioning	47,60 ± 16,34	61,40 ± 21,23	<b>0,0000</b>
role limitations due to physical health	32,72 ± 14,21	39,16 ± 20,01	<b>0,0392</b>
pain	35,45 ± 15,86	46,00 ± 21,14	<b>0,0016</b>

general health	26,31 ± 11,47	38,53 ± 18,22	<b>0,0009</b>
<b>Physical Component of health [PH]</b>	35,52 ± 17,96	46,27 ± 19,36	<b>0,0174</b>
emotional well-being	52,74 ± 20,06	55,37 ± 20,67	0,6977
energy / fatigue	41,00 ± 19,77	52,00 ± 19,84	<b>0,0049</b>
role limitations due to emotional problems	53,12 ± 18,60	63,74 ± 19,99	<b>0,0101</b>
social functioning	58,61 ± 21,42	62,58 ± 18,85	0,5422
<b>Mental Component of health[MC]</b>	51,36 ± 23,07	58,42 ± 22,58	<b>0,0236</b>

The relationships between SOC and the SF-36 subdimensions were showed in table 4.

**Table 4. Correlation coefficient between SOC-29 and SF-36**

<b>SOC – 29 components</b>	<b>SF-36 factors and components</b>	<b>r - coefficient</b>	<b>p - value</b>
Sense of comprehensibility	emotional well-being	0,22	0,031
	pain	0,14	0,045
	PC	0,17	0,034
	MC	0,26	0,016
Sense of manageability	pain	0,19	0,044
	energy / fatigue	0,31	0,358
	PC	0,19	0,412
	MC	0,24	0,011
Sense of meaningfulness	social functioning	0,29	0,049
	PC	0,21	0,046
	MC	0,20	0,019
Sense of Coherence	emotional well-being	0,41	0,024
	pain	0,37	0,017
	energy / fatigue	0,26	0,020
	role limitations due to emotional problems	0,30	0,032
	social functioning	0,28	0,046
	PC	0,24	0,038
	MC	0,30	0,008

## **DISCUSSION**

The sense of coherence is a theoretical formulation that provides a central explanation for the role of stress in human functioning. Salutogenesis seeks to explain why people stay healthy, as opposed to a pathogenic model, which focuses on what makes people ill [23]. The core of the salutogenic paradigm focuses on successful coping through the selection of realistic coping strategies and emerges from generalized resistance resources, which are posited to be major psychosocial resources such as: social support, ego strength, a stable system of values, and many other things that are effective in avoiding and combatting a wide range of stressors [2]. Antonovsky's theory met with a lot of criticism. According to many researchers the concept is psychometrically unclear, confounded with emotions, full of contradictions, lacking in evidence of stability over time, and deficient in predicting physical health status [24].

Despite that Antonovsky's addressed his work in the field of health psychology, behavioral medicine, and the sociology of health [2], the SOC is a widely applied concept in medicine. Numerous studies have shown that SOC is positively associated with health behaviours [25,26], physical and psychological health [27], health-related quality of life [14-16,28-31] and predicts good health [32,33].

SOC has often been related with the ability to cope with stressful life events, such as severe disease [34]. The present study demonstrated that individuals with cardiac problems experience a poorer subjective sense of coherence (table 1) – comparing results to the another studies in general population [35,36]. Furthermore, Antonovsky claimed that the three SOC subdimensions are interrelated and dynamic. This means that a patient with a low SOC total score may have a high score on one or two subdimensions [2]. Data contains in table 1 supported this hypothesis.

This study also revealed significant differences between people with strong and low sense of coherence. Individuals with strong SOC presented less functional and mental impairments than persons with low values of global life orientation (table 3). The moderate association between SOC and health-related quality of life was recorded (table 4). This findings is consistent with previous studies which have found a deterioration in QoL with decreasing of SOC and his components [ 14-16,28-31].

## **CONCLUSIONS**

In conclusion, higher Sense of Coherence had a positive association with better health-related quality of life.

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