

CORRELATION BETWEEN CLINICAL AND SOCIOECONOMIC CHARACTERISTICS AND PERCEIVED HEALTH STATUS OF PATIENTS WITH HEART FAILURE

CORRELAÇÃO ENTRE CARACTERÍSTICAS CLÍNICAS, SOCIOECONÔMICAS E ESTADO DE SAÚDE PERCEBIDO DE PACIENTES COM INSUFICIÊNCIA CARDÍACA

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ABSTRACT: Associations between generic and specific perceived health status have been little used in the clinical practice of the cardiovascular sciences. Describe the clinical and socio-economic profile of heart failure patients (HF) and correlate their perceived health status (PHS) (generic and specific) with clinical and socio-economic variables. Cross-sectional, quantitative and analytical study approved by the ethics committee - Federal University of Triângulo Mineiro (number 833.007). A sample of 91 individuals with different functional classes and etiologies of HF and who were in outpatient follow-up answered the following questionnaire: 1. Clinical and socioeconomic questionnaire; 2. Visual Analog Scale (VAS); 3. Minnesota Questionnaire (MLWHFQ). We studied 91 patients with HF; the majority was male (50.5%) married (52.7%), inactive (working condition) (83.51%), NYHA functional class IV (29.7%) hypertension etiology (46.2%). The VAS was correlated significantly ($p < 0.05$) with the variables family income ($r = 0.173$) and left ventricular ejection fraction (LVEF) ($r = 0.221$) and significant ($p < 0.01$) comorbidities ($r = 0.237$) and medications ($r = 0.475$). Significant associations ($p < 0.05$) were established between the VSA, gender, surgical procedure and NYHA functional class IV. All MLWHFQ domains were significantly associated ($p < 0.01$) with the female gender and functional class IV. Perceived health status showed significant decline in all dimensions when compared to other published studies, demanding attention from the health professionals and new clinical strategies to manage heart failure.

KEYWORDS: Cardiology. Heart Failure. Quality of Life.

INTRODUCTION

Because of its poor prognosis and because it is the final common pathway in cardiovascular disease, heart failure (HF) is seen as an important clinical challenge today. Hypertension and ischemia are the most common etiologies in Brazil (CARVALHO et al, 2009). With high epidemiological mortality rates and major socio-economic impact, HF has become a major public health problem (BOCCHI et al, 2012).

According to the New York Heart Association (NYHA) the HF is classified into four functional classes (FC), based on signs and symptoms, history of associated previous diseases, physical examination and laboratory investigations. Many are the physical symptoms such as pain, chest discomfort, orthopnea, syncope and tachycardia. Beside those, swelling, loss of appetite, dry mouth,

and daytime sleepiness, difficulty in maintaining a refreshing sleep, dyspnea and fatigue are commonly present (DI NASO et al, 2011; PELEGRINO et al, 2011).

With so many effects of HF on clinical, social and public health areas, it is viable that the health professional watch out for its impact on patients' health related quality of life (HRQOL), also called perceived health status, in order to establish the therapeutic priorities (SANTOS et al, 2012). Including the evaluation of perceived health status (PHS) can be an important strategy for the treatment of HF, as it allows the building of a situational diagnosis in order to identify in individual and holistic ways the needs and risks, besides assist the approach of the health professionals, improve the health team communication and verify the health interventions' results. However, the number of studies that

evaluate the relationship between the health statuses of HF patients with clinical indicators is still incipient especially in. Published studies do not associate generic and specific ESP, leaving gaps in relation to the behavior of these variables, as well as do not correlate with other data, such as clinical and socioeconomic (FINI; CRUZ, 2009; FINI; CRUZ, 2013).

This study aimed to assess the relationship between social-economic variables (gender, marital status, working conditions, household income and education) and clinical variables (functional class [FC], etiology, drug treatment, comorbidities number, cardiac surgical procedures and left ventricle ejection fraction [LVEF]), with the perceived health status in patients with HF.

MATERIAL AND METHODS

Design, Local Study and Ethical Considerations

This is a cross-sectional study, of quantitative and analytical character that was approved by the ethics committee of University Federal of Triangulo Mineiro, n°. 833,007. The study was conducted at the Cardiology Clinic on Federal University of Triangulo Mineiro, Uberaba, Minas Gerais, Brazil.

Sample and Procedures

Individuals participant in this study were patients with heart failure of both genders, older than 18 years, who were in regular clinical follow-up in the Cardiology Clinic. The HF diagnosis criterion was established according to the Guidelines of Brazilian Cardiology (BOCCHI et al, 2012). We excluded from this study, patients with hospital admission in the last 30 days in order to avoid measurement bias in the health status measurement by the effect of recent hospitalization.

To calculate the sample size, we consider a coefficient of determination based on a multiple linear regression model with seven clinical and socioeconomic predictors, from the population size provided by the service, with the level of significance or error of type I of error type II, resulting therefore in an a priori statistical power of 90%. We use the PASS application (Power Analysis and Sample Size), 2002 version (NCSS, 2008) by introducing the above values, it obtains a minimum sample size of $n = 91$, considering a 20% sample loss, including refusals to participate.

The recruitment and approach of individuals with chronic disease occurred in the waiting room of the clinic, where patients were invited to participate. After the presentation of research objectives and

supported by appropriate clarification, we ask participant's consent, which was effected by signing the Instrument of Consent. Then, in a private environment, we apply the questionnaire through technique interview, in order to obtain the social, demographic and clinical characteristics of participants, a "*visual analogue scale (VAS)*" and the "*Minnesota Living With Heart Failure Questionnaire*" (MLWHFQ)]

Data Collection Instruments

Instrument with social, demographic and Clinic information

Minnesota Living With Heart Failure Questionnaire (MLWHFQ)

To assess the health status of people with heart failure, we use the "Questionnaire of Minnesota - MLWHFQ", which is the specific measuring instrument for this assessment, and it was validated for the Brazilian population, by Carvalho et.al. (2009). The questionnaire consists of 21 questions with scores ranging from 0-105 points. The questionnaire assesses the health of the person with HF on three fields, the physical conditions (0-45 points), emotional conditions (0-25 points) and unspecific (0-35 points). The higher the score, the worse is the individual PHS.

Data processing

The collected data were processed with the IBM software Statistical Package for Social Sciences (SPSS) version 21.0 running on *Windows*® environment. For all analyzes, we adopted the 0.05 significance level.

We conducted descriptive analyzes of single frequency for categorical variables (gender, education level, marital status, monthly income etc.), measures of central tendency (mean and median) and variability (standard deviation) for continuous variables.

We used the Pearson correlation test to establish the relationship between the MLWHFQ's scores and the scores of the Visual Analogue Scale according to economic variables (family income and education) and clinical variables (number of comorbidities and number of drugs, LVEF). We also use the Student t test to compare the scores of the MLWHFQ and scores of the Analog Visual Scale according to the variables: gender, working condition, surgical procedures, physical activity and cardiac rehabilitation, as well as analysis of variance (ANOVA) for the variables: NYHA functional class and marital status

RESULTS

The study included 91 patients with Heart Failure. We observed a similar distribution between the gender of the participants, so that a little over half (50.5%) were male. The average age was 63 years (SD = 11.42, range 27-93). The average length

of schooling was 4.41 years (SD = 4, range = 0-15), and the average income of R\$ 1,533.61 (SD = R\$ 1,448.00, range = R\$ 350.00 to R\$ 6,000.00). There was a predominance of males (50.5%) most of them reported being married (52.7%) and retirees (83.51%), as shown in Table 1.

Table 1. Socio-demographic characteristics of patients with heart failure treated at the outpatient cardiology at the Federal University of Triangulo Mineiro, from September 2014 to March 2015. Uberaba, MG.

Variable	N	%
Gender		
Male	46	50.5
Female	45	49.5
Marital status		
Married	48	52.7
Single	18	19.8
Widow(er)	15	16.5
Divorced	10	11
Working conditions		
Inactive	76	83.5
Active	15	16.5
TOTAL	91	100

As to clinical characteristics, we can see in Table 2 that the predominant functional class in the participants of the study was the FC I (35.2%) of hypertensive etiology (46.2%), and antithrombotic

(60.4%). Hypertension was the most common comorbidity (88.5%) and angioplasty (30.8%) was the most common heart surgery performed in the participants of this study.

Table 2. Clinical characteristics of patients with heart failure treated at the cardiology clinic of the Federal University of Triangulo Mineiro, from September 2014 to March 2015. Uberaba, MG.

Variable	N	%
Functional Class (NYHA)		
I	32	35.2
II	27	29.7
III	25	27.5
IV	7	7.7
Etiology		
Hypertensive	42	46.2
Ischemic	23	25.3
Chagasic	12	13.2
Valve	12	13.2
Ethyl, drug	1	1.1
Iidiopathic	1	1.1
Medication		
Antithrombotic	55	60.4
Beta-blocker	53	58.2
ACE inhibitor	51	56.0
Statin	43	47.3
Diuretic	40	44.0
Anxiolytic / antidepressant	13	14.3
Nitrate	5	5.5
Digitalis	1	1.1

Comorbidities

SAH	76	83.5
Dyslipidemia	23	25.3
Chagas	17	18.7
Angina	13	14.3
Anxiety/Depression	11	12.1
CAD	10	11.0
Hypothyroidism	10	11.0

Surgical procedure

Angioplasty	28	30.8
Valvuloplasty	15	16.5
Pacemaker	5	5.5
Revascularization	3	3.3
None	40	43.9
TOTAL	91	100

ACE inhibitor: Angiotensin-converting enzyme inhibitors; SAH: Systemic Arterial Hypertension; CAD: Coronary Artery Disease.

Table 3 shows the correlations between VAS scores and MLWHFQ with clinical and socioeconomic variables. The VAS was correlated positively, weak and significant with the variables family income (r = 0.173), number of comorbidities (r = 0.237), left ventricular ejection fraction (r =

0.221), moderate with the number of drugs (r = 0.475). All areas of MLWHFQ correlated positively, moderate and significantly with the number of drugs used by patients with HF, as well as negative and significant with the ejection fraction of the left ventricle shape.

Table 3. Pearson's correlation coefficient between measures of perceived health status (VAS), total scores and the areas of the Questionnaire of Minnesota (MLWHFQ) with social, demographic and clinical variables of patients with heart failure treated at the cardiology clinic of Federal University of Triangulo Mineiro, from September 2014 to March 2015. Uberaba, MG.

Variable	VAS	Domains Minnesota – MLWHFQ			Minnesota total
		physical	Emotional	Unspecific	
Gross family income	0.173*	0.103	- 0.044	-0.027	-0.073
Education (years)	0.028	0.014	0.126	0.129	0.214
Number of Comorbidities	0.237**	0.117	0.127	0.128	0.210
Number of drugs	0.475**	0.403*	0.413**	0.409**	0.494**
Ejection fraction (LVEF)	0.221*	- 0.256**	-0.152*	- 0.312**	- 0.272**

SOURCE: THE AUTHOR, 2015.

The means of association between VAS and the domains of MLWHFQ with categorical variables are shown in Table 4. The VAS was associated significantly (p <0.05) with the variables inactive working condition, surgery and functional class NYHA IV. All areas of MLWHFQ were

associated significantly (0 <0.01) with the variable female gender and NYHA functional class IV, as well as the emotional domain with surgical procedure (p <0.05) and the Unspecified with inactive working condition (p <0.01).

Table 4. Comparison between the scores of perceived health status (VAS) and the domains of the questionnaire Minnesota (MLWHFQ) with categorical variables of patients with heart failure treated at the cardiology clinic of the Federal University of Triangulo Mineiro, from September 2014 to March 2015. Uberaba, MG.

Variable	VAS	Domains Minnesota – MLWHFQ			Minnesota total
		physical	Emotional	Unspecific	
Gender					
Male	58.63	22.06	11.14	14.59	47.49
Female	61.98	25.08**	12.75**	15.78**	53.77**
Working Condition					

Active	70.00*	20.71	11.18	12.36	44.25
Inactive	53.57	23.84	11.96	15.47**	51.27
Surgical procedure					
Yes	57.83	23.81	12.36*	15.56	51.44**
No	66.57*	23.00	10.97	14.34	48.31
Functional Class NYHA					
I	73.00	12.57	8.41	9.41	30.39
II	61.52	21.99	11.73	14.48	48.19
III	55.34	29.00	12.87	17.41	59.28
IV	50.15*	35.00**	16.39**	22.43**	73.83**
Marital Status					
Single	52.50	23.05	12.46	14.92	50.43
Married	62.37	23.71	11.74	15.12	50.58
Divorced	56.00	21.16	11.28	14.31	46.75
Widower	62.19	25.39	12.47	16.22	54.08
Physical activity					
Yes	61.88	22.52	10.85	13.89	47.26
No	59.79	23.75	12.11	15.42	51.29
Cardiac Rehabilitation					
Yes	64.44	22.94	12.17	14.28	49.39
No	59.85	23.62	11.86	15.23	50.70

*p<0.05; **p<0.01

DISCUSSION

It is known that elderly individuals with low education have greater exposure to risk factors related to cardiovascular disease as a result of the peculiarities of its demographic and epidemiological profile (CARNELOSSO et al, 2010; FARIA et al, 2015; IMA et al, 2011). It's emphasized the importance of special attention to the health care of the targeted population with low social instruction and school education, either by recruitment of specialized health professionals and / or specific health policies. People with HF retire earlier or they stop working due to the symptoms caused by the disease and by the feeling of worthlessness caused by the installed health condition (SANTOS et al, 2012) corroborating with the data found in this study.

FC NYHA provides a simple way to classify the extent of HF (BOCCHI et al, 2012; SORIANO et al, 2011; MUELA et al, 2011) predominating in the sample (35.2%). This data differs from the data in the literature, where outpatients are commonly stratified in class II and III, and FC I patients rarely have any health monitoring for the slight and sporadic symptoms of the heart disease (ALMEIDA et al, 2013; SIPAHI et al, 2014).

The HF of hypertensive etiology and hypertension as a comorbidity associated predominated in this study. Several studies have shown similar results to these, since hypertensive

patients' exhibit structural changes of the heart, such as left ventricular hypertrophy. It is believed that early diagnosis, change in lifestyle and adherence to antihypertensive treatment can reduce this etiological form of HF (BOCCHI et al, 2012; WU et al, 2012; GOMES et al, 2011).

Significant correlations have been established between the VAS and variable income, number of comorbidities, number of drugs and LVEF. Studies show that low income is related to the difficult access to health services by associated comorbidities, as well as difficulty to acquisition of medicines, adaptation and change of lifestyle has directly impact on patient PHS (ALMEIDA et al, 2013; SOUZA, et al, 2014) Likewise, minor amounts of blood ejected by the heart to body systems obtained by LVEF increase symptoms caused by the disease and reduce good health perception by the individual (LINDVALL; HULTMAN; JACKSON, 2013; SPINAR et al, 2011; GAUI; OLIVEIRA; KLEIN, 2014).

All domains of MLWHFQ were correlated in a positive and significant way with the number of used drugs and in negative way with the LVEF. It is known that a determining factor in the reduction of PHS in patients with HF refers to the side effects of the drug therapy used for the treatment of the HF, which directly impacts the daily life habits (ALMEIDA, 2012; ROLANDE et al, 2012;

Side effects of prescription drugs to HF commonly described in the literature are the

gynecomastia that directly impacts the body image, as well as polyuria, insomnia, fatigue and nightmares. Diuretics and beta-blockers can also cause erectile dysfunction as well as amiodarone that can induce depressive disorder and thyroid dysfunction (ULBRICH et al, 2013; CHIODELLI et al, 2015).

The VAS is associated in a significant way with working condition variable, surgical procedure and the NYHA functional class IV. Studies show that inactivity or retirement by HF awakens in the individual the feeling of uselessness for the society, and it impacts their relationship with their families and with their social support network and it can be attenuated after performing invasive cardiac surgical procedures (GOMES et al, 2011; GUIMARÃES; GARDENGHI; SILVA, 2015).

Furthermore, the literature highlights serious deficits on the PHS of patients with heart failure NYHA IV, since it has negative impact on the functional capacity, exacerbated clinical symptoms and reduction of social life (GUIMARÃES; GARDENGHI; SILVA, 2015; 2014; IMA et al, 2011).

The MLWHFQ was associated with the NYHA functional class IV and also showed that female patients have worse perceived state of health. These data corroborate the literature, since high rates of depression and other emotional nature disorders are present in the HF. Female patients tend to develop depression more rapidly than men, fact explained in the literature for developing several daily activities, with a greater burden of responsibility in relation to men. (qual a razão para isto?) (PELEGRINO et al, 2011; LINDVALL; HULTMAN; JACKSON, 2013).

The MLWHFQ was associated in a significant way with the variables surgical procedures and inactive working condition, results that confirm the literature that indicates that the performance of cardiac surgical procedures, despite having corrective purpose, worsen the perceived

health status over time (CHIODELLI et al, 2015; GOMES et al, 2011; GUIMARÃES; GARDENGHI; SILVA, 2015).

In contrast, findings show that surgical procedures widely used in the treatment of heart failure, such as cardiac catheterization, angioplasty and revascularization of the myocardium, have benefits on the quality of life, since modifying the disease carrier lifestyle, reducing symptoms such as fatigue and dyspnea, optimizing your social life and reducing psychological complaints related to anxiety and depression (RANGEL et al, 2014; GAUI; OLIVEIRA; KLEIN, 2014).

The inactive working condition refers to retirement. The qualitative aspects to society are even greater, since they represent early exit from the workforce, with great damage to the individual's self-esteem and need to support pension (ULBRICH et al, 2013; SOUZA et al, 2014; SIPAHI et al, 2014).

CONCLUSIONS

The perceived health status of patients with HF is inversely proportional to the disease, as shown in the correlations between the NYHA functional class IV and other clinical variables. Besides, the perceived health status in patients with heart failure showed a significant decline both through the scores of the instrument VAS as the MLWHFQ. It is inferred by the need for further studies of methodological nature able to perform interventions and health education in this population in order to optimize the scores of quality of life in this population.

The evaluation of perceived health status of patients using generic and specific tools to HF proves to be an excellent tool for measuring the multiple dimensions of individual health, which have important clinical inferences for the treatment of these patients.

RESUMO: Associações entre o estado de saúde percebido genérico e específico têm sido pouco utilizados na prática clínica das ciências cardiovasculares. Descrever o perfil clínico e socioeconômico de pacientes com Insuficiência Cardíaca (IC) e correlacionar o estado de saúde percebido (ESP) genérico e específico destes pacientes com variáveis clínicas e socioeconômicas. Estudo transversal, quantitativo e analítico, aprovado pelo comitê de ética da Universidade Federal do Triângulo Mineiro, nº 833.007. Uma amostra de 91 indivíduos com diferentes classes funcionais e etiologias de IC e que estavam em acompanhamento ambulatorial responderam aos seguintes questionários: 1. Questionário Clínico e socioeconômico; 2. Escala Visual Analógica (EVA); 3. Questionário de Minnesota (MLWHFQ). Foram avaliados 91 pacientes com IC, a maioria do sexo masculino (50,5%) casados (52,7%), com condição de trabalho inativa (83,51%), classe funcional NYHA IV (29,7%) de etiologia hipertensiva (46,2%). A EVA correlacionou-se de forma significativa ($p < 0,05$) com as variáveis renda familiar ($r = 0,173$) e fração de ejeção do ventrículo esquerdo (FEVE) ($r = 0,221$) e significativa ($p < 0,01$) com comorbidades ($r = 0,237$) e medicações ($r = 0,475$). Associações significativas ($p < 0,05$) foram estabelecidas entre a EVA, sexo, procedimento cirúrgico e classe funcional NYHA IV. Todos os domínios do MLWHFQ

se associaram de forma significativa ($p < 0,01$) com sexo feminino e classe funcional NYHA IV. O estado de saúde percebido demonstrou declínio em todas as suas dimensões, importante quando comparado a outros estudos publicados, demandando atenção dos profissionais de saúde e novas estratégias de manejo clínico da IC.

PALAVRAS-CHAVE: Cardiologia. Insuficiência Cardíaca. Qualidade de vida.

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