

IMPACT OF PHYSICAL LIMITATION IN LIFE QUALITY HEALTH RELATED OF HEART FAILURE PATIENTS

IMPACTO DA LIMITAÇÃO FÍSICA NA QUALIDADE DE VIDA RELACIONADA À SAÚDE DE PACIENTES COM INSUFICIÊNCIA CARDÍACA

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ABSTRACT: The heart failure (HF) it's a self-limiting and severe condition, of varied etiology, with negative repercussions to the political-economic framework, and to health related life quality (HRLQ) of patients with HF, due to its standard symptoms and effects. Its's believed that due to the reduced cardiorespiratory competence coming for the HF, certain physical limitation levels would be expressed, impairing directly the HRLQ. To evaluate the physical limitation impact in the HRLQ of Heart Failure patients. Cross-sectional study, quantitative, descriptive and analytical character, conducted with patients treated at a Cardiology outpatient clinic from a university hospital. To evaluate the patients was used: characterization questionnaire Clinic and Socioeconomic, Minnesota Living With Heart Failure Questionnaire (MLHFQ) and the Veterans Specific Activity Questionnaire (VSAQ). The data was managed in Microsoft Office Excel® 2010 program, double independent entry. Subsequently imported into Statistical Package for Social Science program (SPSS), version 21.0, which were conducted exploratory analyzes of data from the calculation of simple absolute and percentage frequencies for categorical variables and measures of centrality and dispersion for quantitative variables, as well as parametric testing Pearson correlation, since the normal distribution of variables. In the research were included 108 patients, with a predominance of female participants (50.90%), mean age of 66.55±11.41 years. Regarding the NYHA functional classification at level II (50%) and NYHA III (39.80%) were the most prevalent. The etiologies of HF was the most prevalent Chagas' Heart (50.90%). The MLHFQ showed negative impact of the IC under the HRLQ, which presented a total score of MLHFQ of 51.87±15.74 points. At the physical limitation the VSAQ resulted in an average of 3, 37±1, 41 with bigger impairment to the METS3 (45, 4%). The MLHFQ and VSAQ correlation presented itself negative, moderate to strong and significant ($p < 0, 01$) it results for each domain being: physical (-0,523); emotional (-0,436); nonspecific (-0,411), and MLHFQ's total score (-0,562). It has been confirmed that the greater the degree of heart damage due to HF presents, the lower will be the patient's MET results confirming a physical limitation as a HRLQ's impairing predictor.

KEYWORDS: Heart Failure. Life Quality. Physical Capacity

INTRODUCTION

Heart diseases (HD) are one of the world's most common causes of death (WHO, 2011). It stands as the third most common hospitalization cause in Brazil' health system, Sistema Único de Saúde (SUS) from which Heart Failure (HF) is the most frequent of those (BOCCHI et al., 2012; BRASIL, 2012a; BRASIL, 2012b).

HF is a severe, self-limiting and multi etiological condition when the heart muscle lacks the strength to sustain the body tissue's nutrition and oxygen support (SPINAR et al., 2011; LATUF, 2013; DIAS et al., 2015).

It's known that the HF's main consequences regarding its symptoms are the dyspnea, the edema and the fatigue related to the physical limitation, which due to its pathophysiology there is a cardiac

output reduction and an increase from both, lung and systemic venous pressure, leading to functional capability's deficits, the last being an important HD's mortality predictor and prognostic marker (DI NASO et al., 2011; DIAS et al., 2015).

Inside this context some instruments have been developed aiming to evaluate HF patient's physical limitation. Among those methods there's the HF's functional classification from New York Heart Association (NYHA), which is based according with the symptoms presented by the patient when performing daily activities, varying from I to IV and the Veterans Specific Activity Questionnaire (VSAQ), which is an instrument able to measure the HF's physical limitation though metabolic equivalents (METs) (MYERS et al., 1994; DOMINGUES, 2010; DI NASO et al., 2011). Each MET represents an increase of 10% in the

survival rate, meaning that the higher the MET result, the better the patient's aerobic capability is, as well as its functional performance (COELHO-RAVAGNANI et al., 2013).

It's believed that the HF's physical repercussions have direct influence in the individual's social relationships and emotional aspects, directly and indirectly affecting its live quality (LQ) and resulting in a HRLQ's impairment. In this context, the measurement of the HF patient's HRLQ becomes important due to the possibility to evaluation and/or comparison of the clinical interventions effects (MONTEIRO et al., 2010; SANTOS et al., 2012).

Recently the research of the physical limitation's impact over the HRLQ has been increased in the international dimension. However, despite it's an important marker and HRLQ influencer, there are very few researches developed and the physical aptitude instruments and the HF patient's HRLQ evaluation are not normally used in the national literature (DOMINGUES, 2010; SPINAR et al., 2011; DIAS et al., 2015).

It's already known that researches regarding this type of subjects (LQ and physical limitation evaluation) may present valuable information when establishing parameters, making possible the construction of an situational diagnosis for each patient aiming to identify its needs and risks, help in the health professional approach, improve the health team's communication, and verify the health results in pre-developed goals and objectives (DI NASO et al., 2011). In this context the objective of this research was to evaluate the physical limitation impact in HF patient's HRLQ.

MATERIAL AND METHODS

Research type, Population and Ethic aspects

Cross-sectional study, quantitative, descriptive and analytical character, conducted with patients treated at a Cardiology outpatient clinic from a university hospital from Minas Gerais (MG), approved by the Ethics and Research Committee with Human under protocol n°1.240.465, conducted with HF patients, older than 18 years old who haven't been admitted to the hospital in the last 30 days.

Applicants Recruiting and Data Collect Instruments

It has been developed a pilot study to ten patients how fit in the requirements to participate in the study, and obtained a total sample of 108

patients, the collecting period stretched out from December 2015 until February 2016.

Through the consent form's signing, the participants answered the instruments questions, beginning with the instrument named, Clinical and Socio-demographic Characterization Questionnaire (DE ALMEIDA NETO; PEDROSA, 2015). Next, It's been utilized the Minnesota Living With Heart Failure's (MLHFQ) Brazilian validated version, for HRLQ's measurement (RECTOR; COHN, 1992; CARVALHO et al., 2009). And finally it was applied the VSAQ's Brazilian validated version in order to quantify de HD patient's physical limitation corresponding MET (MYERS et al., 1994; DOMINGUES, 2010).

Data Managing and Statistical Analysis

The data were managed in the Program Microsoft Office Excel® 2010, followed by its data bank validation. Afterwards, the data were imported to the Statistical Package for the Social Science (SPSS®) software, 20.0 version, for statistical analysis. Exploratory analysis of the data were made after the definition of the absolute simple and percentage frequencies to de categorical variables and centrality and dispersion measures to the quantitative variables. The Cronbach α internal consistency measures were used to verification of MLHFQ's results. In order to verify the relation between the quantitative variables (MLHFQ/VSAQ), Pearson's correlation test was applied. A significance level equals 5% ($p \leq 0, 05$) was adopted to the bivariate analyzes. The correlations were classified as: weak ($0 < r < 0, 3$), moderate ($0, 3 < r < 0, 5$) or strong ($r \geq 0, 5$).

RESULTS AND DISCUSSION

Socioeconomic characteristics

Were found in this study a prevalence of participants in white color, married, retired and from the female gender (Table 1).

The women prevalence diverge from other studies (NOGUEIRA; RASSI; CORRÊA, 2010; ALITI et al., 2011; LINDVALL; HULTMAN; JACKSON, 2014; ALMEIDA; GUTIERREZ; MARQUES, 2012).

Table 1. Socioeconomic characteristics of the following categorical variables: sex, color, marital status, religion, work condition, from HD patients attended at the heart clinic of an university Hospital from MG since December 2015, until February 2016.

VARIABLE	N	%
Sex		
Female	55	50,90
Male	53	49,10
Color		
White	56	51,90
Brown	35	32,40
Black	14	13,00
Yellow	3	2,80
Marital state		
Married	58	53,70
Widower	22	20,40
Devorced	16	14,80
Single	12	11,10
Religion		
Catolic	65	60,20
Evangelic	30	27,80
Spiritist	6	5,60
Other	5	4,60
No religion	2	1,90
Work Condition		
Retired	95	88,00
Active	7	6,50
Inactive	6	5,60
TOTAL	108	100

Source: O Author, 2016

The 2010 census from the Brazilian Institute of Geography and Statistics (IBGE) may justify the divergence above mentioned due to the bigger number of women living in the country (IBGE, 2010). Another explanation lays on the fact that the male population tends to delay the health assistance exposing themselves to risky situations, more frequent hospitalization and other comorbidities (BARBOSA; JURKEVICZ, 2010).

Clinical characteristics

As observed in Table 3, the number of patients with NYHA I classification was very low, but this may be explained by the asymptomatic characteristic of this level classification. While those who got NYHA IV normally tend to skipping directly and frequently to hospital internment, which is not this research focus.

Table 3. Clinical characteristics from HF patients attended at the heart clinic of an university Hospital from MG since December 2015, until February 2016.

VARIABLE	N	%
NYHA Functional Class		
I	7	6,50
II	54	50,00
III	43	39,80
IV	4	3,70
Etiology		
Chagasic Heart disease	55	50,90

Isquemic Heart disease	29	26,90
Hipertensive Heart disease	12	11,10
Valvular Heart disease	6	5,60
Idiopathic	6	5,60
Medications		
Betablocker	63	58,30
Diuretic	70	64,80
ACEI / ARB	62	57,40
Antithrombotic	46	42,60
Estatin	26	24,10
Nitrate	24	22,20
Digitalic	19	17,60
Antidepressant / Axiolytic	18	16,70
Comorbidities		
Chagas	64	59,30
Systemic arterial hipertension	57	52,80
Arrhythmia	31	28,70
Atrioventricular block	27	25,00
Dyslipidemia	17	15,70
Coronarian Arterial Desiese	16	14,80
Anxiety / Depression	16	14,80
Diabetes mellitus	13	12,00
Hipotireoidism	9	8,30
Angina	9	8,30
Atrial fibrillation	8	7,40
Stroke	6	5,60
Chronic renal failure	6	5,60
Obesity	5	4,60
Surgical Heart Procedure		
Pacemaker	82	75,90
Angioplasty	21	19,40
Revascularization	6	5,60
Valvuloplasty	2	1,90
Life Habits		
Physical Activite	3	2,80
Smoker	13	12,00
Ex-smoker	28	25,90
Alcoholic	10	9,30
Ex-Alcoholic	20	18,50
Heart Rehabilitation	0	0

Source: The Author, 2016.

The main HF cause identified in this study was the chagasic heart desiese (55;50,90%) followed by the isquemic heart desiese (29; 26,90%), such data corroborate with the ones found by Nogueira, Rassi and Corrêa, (2010) and Porto, Rassi and Costa Neto, (2012). This data is justified by the prevalence of Chagas disease (64; 59, 30%) as main comorbidity found among the selected patients. According to WHO, about sixteen to eighteen million people have Chagas disease in Latin America, in Brazil the number of infected it's close to five million people, with the highest

infection rates being of the southeast region (XAVIER et. al, 2015).

Following this reasoning, it's justifiable the surgical procedures most common at the study (Pacemaker 75,90% and angioplasty 19,40%), because the pace maker implant is a standard procedure in patients with Chagas disease, due to the damage caused on the cardiac muscle, generating clinical conditions of bradyarrhythmia, VAB and deficient sinus node conduction (GONZALEZ et. al, 2014.).

Health Related life quality in Heart Failure Patients

The LQ evaluation is as important at the health area as in the generic scientific field, since its concept interposes to the health concept: satisfaction

and wellbeing in all physical, socioeconomic and cultural scope (MONTEIRO et al., 2010; PEREIRA; TEIXEIRA; SANTOS, 2012).

At the HRLQ measurement, the MLHFQ presented the scores shown at Table 4.

Table 4. MLHFQ's characteristics classified by domains and total score, from HF patients attended at the heart clinic of an university Hospital from MG since December 2015, until February 2016.

VARIABLE	AVAREGE±SD	MINIMUN	MAXIMUN	CRONBACH'S ALFA
Physical Domain	25,27±8,86	8	40	0,680
Emotional Domain	10,07±5,69	0	25	0,789
Unspecific Domain	13,78±3,54	6	21	0,816
Minnesota Total	51,87±15,74	16	92	0,811

Source: The Author, 2016.

The physical domain average score presented higher than other studies results which used the same instrument, varying between 7, 9 – 17 points (SACCOMANN; CINTRA; GALLANI, 2011; LIMA; MORAIS, 2014).

According to MLHFQ's interpretation, the symptoms and physical limitations which disturbs the HF patient's work, recreation, autonomy and independence are identified by them as LQ reducers.

Regarding the emotional domain, the study shown a deterioration of the psychic aspects when compared with other cross-sectional studies performed at the states of São Paulo and Goiás which found 6,8 and 7,8 scores in the emotional evaluation respectively (SACCOMANN; CINTRA; GALLANI, 2011; LIMA; MORAIS, 2014). However another research found a higher value equal to 15, 1 indicating a HRLQ loss in the emotional aspects (SANTOS; PLEWKA; BROFMAN, 2009).

The total average of MLHFQ remained high when compared with other studies where the maximum values got a variation from 34,95 to 38, meaning that the patients included in this study presented higher HRLQ deficit (NOGUEIRA; RASSI; CORRÊA, 2010; SACCOMANN; CINTRA; GALLANI, 2011; LIMA; MORAIS, 2014).

A recent research regarding the general and specific HRLQ of HF patients and their socioeconomic profile in some University Hospital from the Triangulo Mineiro, presented very close results with the ones found at the present study (DE ALMEIDA NETO; PEDROSA, 2015). A possible result justification could be the fact that both studies were performed at the same region, therefore the population and data behavior were very likely to be similar. Another hypothesis would be the non-adhesion to the suggested therapeutic treatment as well as a multiprofessional treatment, which leads to a HRLQ loss aggravation.

Physical limitation on Heart Failure patients

There are very few studies using the VSAQ (Table 5), initially being directed to patients with Lung Capacity Test (PCT) indication, this last considered the gold standard in functional capacity evaluation. Despite the direct measure being more precise and considered the main clinical measurement method, a big cut of the population doesn't get access to it, due to its high price, extended procedure time and great risk of cardiovascular events in HD patients (COOK et al., 2001; PIERSON et al., 2003; MCAULEY et al., 2006; ROCHA et al., 2006; DOMINGUES, 2010; CARVALHO et al., 2011).

Table 5. VSAQ instrument characteristics sorted by centrality measures, dispersion and simple frequency from HF patients attended at the heart clinic of an university Hospital from MG since December 2015, until February 2016.

VARIABLE	AVERAGE±SD	MINIMUN	MAXIMUN	N	%
VSAQ	3,37±1,41	1	8	-	-
1 MET	-	-	-	5	4,6
2 METS	-	-	-	20	18,5
3 METS	-	-	-	49	45,4
4 METS	-	-	-	13	12,0
5 METS	-	-	-	14	13,0
6 METS	-	-	-	2	1,9

7 METS	-	-	2	1,9
8 METS	-	-	3	2,8

Source: The Author, 2016; MET: Metabolic Equivalent; METS: Metabolic Equivalents

The result presented by VSAQ's application in this study has presented itself lower than other studies (Table 5) meaning that the sample patients have higher functional loss and greater mortality risk (COOK et al., 2001; PIERSON et al., 2003; MCAULEY et al., 2006).

The patients shown physical capability to perform simple daily activities (eating, getting dressed, taking shower, walking slowly through small distances), an explanation for the VSAQ's low score could be the physical activity and heart rehabilitation low adherence, found at this study (Table 3). It's know that physical inactivity generally leads to poor conditioning and reduced

aerobial capability, especially in older subjects (MUELLA; BASSAN; SERRA, 2011; ALMEIDA et al., 2013; SILVEIRA; RIBEIRO; RAMIS, 2012).

Specific HRLQ and VSAQ correlation

There weren't any reference, either national or international making a MLHFQ and VSAQ correlation, until the reference revision of this study, making it the first of its kind.

The results obtained through Pearson's correlation, between VSAQ and MLHFQ domains, is justified by the HF's symptomatology and therapeutic characteristics themselves as above mentioned.

Table 6. Pearson's correlation between MLHFQ domains and VSAQ's score from HF patients attended at the heart clinic of an university Hospital from MG since December 2015, until February 2016

VARIABLE	VSAQ
Minnesota Physical Domain	-0,523**
Minnesota Emotional Domain	-0,436**
Minnesota Inespecific Domain	-0,411**
Minnesota Total Score	-0,562**

Source: O Author, 2016; **p<0,01

In this context the correlation presented strong and significant values between the MLHFQ domains and VSAQ's METS scores ($r= 0, 562$) and negative due to the instruments inverse proportionality, while the lower the METS result, the higher the task execution difficulty, the same idea is expressed in the MLHFQ with higher results (PENA et al., 2011; SANTOS et al., 2011; SANTOS et al., 2015).

The predominance of NYHA functional class II and III in the study (Table 3) could be a justification since the higher NYHA classification, the more severe is the individual performance loss. This predominance also implies in a larger number of early retirement, work field removal, greater dependency to perform simple activities, which leads to emotional degradation, low self-esteem, depression and anxiety signals (PEREIRA et al., 2012).

CONCLUSIONS

The negative impact of the HF in all domains of the specific HRLQ were higher than previous studies involving the subject.

VSAQ's results show in this study were lower than any other study found, and they also prove the relationship between HF and physical capability limitation.

This study confirmed the hypothesis that the HF patients with higher classification (sorted by NYHA functional class and low LVEF) presents reduced METS, identifying the physical limitation as a low therapeutic adherence predictor, disease maintenance loss and evolution, confirming its HRLQ negative impact.

Therefore, longitudinal studies using VSAQ and MLHFQ must be encouraged, in order to keep up with this population's possible changes in both METs and HRLQ, with the understanding that these instruments when associated with clinical and propaedeutic exams will converge in a better HF patient's situational diagnosis allowing better and more efficient ways of intervention and treatment for this patient type.

RESUMO: A Insuficiência Cardíaca (IC) é uma condição grave e auto limitante, de etiologia variada, que reduz a qualidade de vida (QVRS), e esta entre as patologias que mais onera o sistema público de saúde, devido aos sinais e sintomas desencadeados e ao grande número de internações devido à complicação da doença. Acredita-se que o desempenho cardiorrespiratório prejudicado pela IC expresse os níveis de limitação física e que impacte negativamente a QVRS. Avaliar o impacto da limitação física na QVRS de indivíduos com IC. Estudo transversal, de caráter quantitativo, descritivo e analítico, conduzido com pacientes atendidos no Ambulatório de Cardiologia de um Hospital Universitário. Para avaliação dos pacientes, utilizou-se: Questionário de caracterização Clínica e Socioeconômica, Minnesota Living With Heart Failure Questionnaire (MLHFQ) e o Veterans Specific Activity Questionnaire (VSAQ). Os dados foram gerenciados no Programa Microsoft Office Excel® 2010, em dupla digitação independente. Posteriormente, importados para Programa Statistical Package for the Social Science (SPSS), versão 21.0, onde foram realizadas análises exploratórias dos dados a partir da apuração de frequências simples absolutas e percentuais para as variáveis categóricas e medidas de centralidade e de dispersão para variáveis quantitativas, assim como teste paramétrico de correlação de Pearson, visto a distribuição normal das variáveis. Foram incluídos no estudo 108 pacientes, com predomínio de participantes do sexo feminino (50,90%), idade média dos pacientes de 66,55±11,41 anos. A classificação funcional NYHA no nível II (50%) e NYHA III (39,80%) foram as mais evidenciadas, com predomínio da etiologia chagásica (50,90%). O MLHFQ evidenciou impacto negativo da IC sob a QVRS, cujo o escore total foi de MLHFQ de 51,87±15,74 pontos. Na avaliação da limitação física o VSAQ obteve média de 3,37±1,41, com um maior comprometimento em atividades referente ao METS 3 (45,4%). A correlação entre os domínios do MLHFQ e VSAQ mostrou-se negativa, moderada à forte e significativa ($p < 0,01$) para os domínios: físico (-0,523); emocional (-0,436); inespecífico (-0,411), e o escore total do MLHFQ (-0,562). A hipótese de que pacientes com maiores graus de IC e FEVE baixa apresentam MET reduzido foi confirmada, identificando a limitação física como um preditor para a piora na QVRS.

PALAVRAS-CHAVES: Doença Cardíaca. Qualidade de Vida. Capacidade Física.

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