

## CHARACTERISTICS OF FATIGUE IN HEART FAILURE PATIENTS: A LITERATURE REVIEW

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*This is a literature review report to describe characteristics (frequency, intensity and correlates) of fatigue in cases of heart failure. MedLine and LILACS were the examined databases. Out of 89 articles identified, 27 were selected for data extraction. Fatigue frequency ranged from 69% to 88% and fatigue intensities are incomparable due to differences in measurement scales. Quality of life, illness progression, physical activity, social and demographic variables, comorbidity, treatment and who assessed the fatigue were variables studied in relation to fatigue. The diversity of fatigue assessment methods causes difficulties to integrate results on fatigue frequency, characteristics and related factors. No study was found on fatigue characteristics in samples of Brazilian heart failure patients.*

*DESCRIPTORS: fatigue; heart failure; review literature; nursing diagnosis*

## CARACTERÍSTICAS DE LA FATIGA DE PACIENTES CON INSUFICIENCIA CARDÍACA: REVISIÓN DE LITERATURA

*Este es un relato de revisión de literatura con el objetivo de describir características (frecuencia, intensidad y factores correlacionados) de la fatiga en la insuficiencia cardíaca. Las bases estudiadas fueron MEDLINE y LILACS. De las 89 referencias encontradas, fueron seleccionadas 27 para extracción de los datos. La frecuencia de la fatiga varió de 69 a 88% y las intensidades no se pueden comparar, ya que las escalas de medida presentan diferentes variaciones. Fueron estudiadas asociaciones de la fatiga con calidad de vida, evolución de la enfermedad, actividad física, variables sociales y demográficas, enfermedades concomitantes, tratamiento y con el evaluador. La diversidad de los métodos de evaluación de la fatiga impone dificultades a la integración de los resultados sobre su frecuencia, características y factores a ella relacionados. No se encontró estudios que describiesen la fatiga, en muestras de brasileños, con insuficiencia cardíaca.*

*DESCRIPTORES: fatiga; insuficiencia cardíaca; literatura de revisión; diagnóstico de enfermería*

## CARACTERÍSTICAS DA FADIGA DE PACIENTES COM INSUFICIÊNCIA CARDÍACA: REVISÃO DE LITERATURA

*Este é um relato de revisão de literatura com o objetivo de descrever características (frequência, intensidade e fatores correlatos) da fadiga na insuficiência cardíaca. As bases estudadas foram MEDLINE e LILACS. Das 89 referências levantadas, foram selecionadas 27 para extração dos dados. A frequência de fadiga variou de 69 a 88% e as intensidades são incomparáveis, pois as escalas de medida apresentam diferentes variações. Foram estudadas associações da fadiga com qualidade de vida, evolução da doença, atividade física, variáveis sociais e demográficas, comorbidades, tratamento e com o avaliador. A diversidade dos métodos de avaliação de fadiga impõe dificuldades à integração dos resultados sobre sua frequência, características e fatores a ela relacionados. Não se encontrou estudos que descrevessem a fadiga, em amostras de brasileiros, com insuficiência cardíaca.*

*DESCRITORES: fadiga; insuficiência cardíaca; literatura de revisão; diagnóstico de enfermagem*

## INTRODUCTION

Cardiovascular diseases are the main cause of morbidity and mortality, with heart failure as the most common cause of hospitalizations and morbidity-mortality in the elderly population<sup>(1)</sup>. Several pathological conditions precede heart failure, such as arterial hypertension, dyslipidemias and myocardial infarction, which are not controlled from an epidemiological viewpoint and, therefore, can explain the increased incidence of heart failure<sup>(2)</sup>. Incidence levels have increased in Brazil and around the world, with an estimated 6.4 million Brazilians suffering from this disease<sup>(2)</sup>.

Symptoms of heart failure patients include dyspnea and fatigue, mainly while exercising, paroxysmal nocturnal dyspnea, orthopnea, lower limb edema and nocturnal cough. These symptoms, especially fatigue and dyspnea, entail functional limitations that can affect patients' psychological and social conditions, impairing their quality of life. Besides the disease itself that causes the above mentioned limitations, medication therapy includes the use of beta blockers, which can increase the risk of hypotension, bradycardia and dizziness, contributing to the patients' limitations<sup>(3)</sup>.

Heart failure patients are in a "chronic" condition, living with a disease that cannot be cured, being obliged to undergo continuous treatment, submitting themselves to collateral effects of medications, unable to avoid the worsening of their disease and to fully escape from the symptoms that will change their quality of life. Non-pharmacological measures can improve treatment adherence and mitigate quite frequent conditions.

Fatigue is a frequent manifestation in heart failure, as well as dyspnea and orthopnea, and is significantly related with the unfavorable evolution of the disease<sup>(4)</sup>. This paper reports on

a literature review on fatigue in cases of heart failure.

Fatigue has been included as a variable in different studies, probably due to its high prevalence in different populations and also due to its impact on quality of life<sup>(5)</sup>.

Nowadays, fatigue is accepted as a subjective and multicausal phenomenon, whose origin and expression involves physical, cognitive and emotional aspects and its identification depends on self-reporting<sup>(5)</sup>.

The analysis of the fatigue concept and its clinical evidence<sup>(5-6)</sup> indicates that fatigue is the expression of different sensations patients mention, such as tiredness and lack of energy.

Fatigue is a nursing diagnosis included in the taxonomy of the North American Nursing Diagnosis Association - International (NANDA-I). It was introduced in 1988 and defined as "an overwhelming sustained sense of exhaustion and decreased capacity for physical and mental work at usual level"<sup>(7)</sup>.

Considering its subjective nature, erroneous interpretations are possible for the fatigue diagnosis. Difficulties to distinguish between activity intolerance and fatigue are especially important in care delivery to heart failure patients.

Nursing can help to control fatigue through interventions aimed at improving patients' resistance capacity, including: health assessment, nutrition control, prescribed activity/exercise, prescribed diet, setting of mutual goals, risk identification, sleep increase, exercise promotion<sup>(8)</sup>.

Heart failure patients express countless responses to their primary condition, which interfere in the biological, social, psychological, mental and spiritual sphere. This explains the need to describe fatigue as one of the most frequent symptoms in this population, with a view to the proposal of interventions in a directed, systemized and well-founded manner.

## OBJECTIVE

This review aimed to describe characteristics of fatigue (frequency, intensity and correlated factors) in cases of heart failure.

## METHOD

This integrative literature review was guided by the question: what are the characteristics and correlated factors of fatigue in heart failure patients?

The review included publications on quantitative and qualitative research that contained fatigue as the primary or secondary variables, with samples including adults or elderly people diagnosed with heart failure due to any cause, in any functional class, either hospitalized or under outpatient or home treatment, with fatigue assessed by any method.

Search strategies aimed to locate research published in English, Portuguese or Spanish, in the databases MEDLINE (from 1966 till December 2007) and LILACS (until December 2007). The descriptors used for the search in MEDLINE were fatigue and heart failure, congestive. Titles and abstracts, when available, were obtained through the above described strategy and assessed for relevance of the contents to the guiding question and whether they presented empirical (quantitative or qualitative) research reports or reviews.

The identified studies were distributed in a quantitative and a qualitative group. In the quantitative group, results were extracted on the fatigue assessment method, frequency, fatigue intensity and variables correlated with fatigue. In the qualitative group, themes were extracted

that expressed the experience of fatigue and related phenomena.

## RESULTS

Eighty-eight references were obtained from MEDLINE and 1 from LILACS. The reading of the titles and, when present, the abstracts showed that 36 references from MEDLINE and 1 from LILACS were relevant for the guiding question and their full texts were searched. The remaining references could not be used because they either were no research reports or did not include fatigue as a study variable or phenomenon. The 37 full texts of the references found in the databases were assessed in terms of relevance for this review. Twenty-seven references were maintained.

In this group of 27 publications, 26 (96.3%) were quantitative and 1 (3.7%) qualitative. Two (7.4%) publications were identified until 1990, 7 (25.9%) between 1991 and 2000 and 18 (66.7%) between 2001 and 2007. No research was found that described fatigue in samples of Brazilian heart failure patients.

The qualitative study aimed to understand the fatigue experience and its consequences for daily life and to identify aspects that mitigate fatigue in heart failure patients<sup>(9)</sup>. The method used was Grounded Theory, and the sample consisted of 15 outpatients treated for heart failure, who participated in interviews. It was observed that fatigue is a circular process in which the consequences enhance the fatigue experience itself. Activities to restore fatigue included being unwillingly attentive, socially interactive and mentally absorbed<sup>(9)</sup>. Table 1 summarizes the quantitative studies.

Table 1 – Description of quantitative studies on fatigue in hearth failure patients, São Paulo - 2007

Year	Objective	Method	Fatigue assessment method	Main results
2007 <sup>(10)</sup>	Examine fatigue prevalence and intensity and determine the influence of sense of coherence and uncertainty on the fatigue experience in heart failure patients	- 93 hospitalized patients - use of 3 scales: Multidimensional Fatigue Inventory, Cardiovascular Populations Scale and Sense of Coherence Scale - Pearson's correlation and linear regression	- Multidimensional Fatigue Inventory	Patients reported high fatigue prevalence and high fatigue intensity in the physical dimension. The functional class of the congestive heart failure (CHF) and sense of coherence explained 31% of variance in general fatigue.
2007 <sup>(11)</sup>	Compare fatigue and quality of life between patients with a confirmed diagnosis of heart failure (HF), patients with symptoms of HF, but without the confirmed diagnosis (NIC) and a control group	- 49 HF patients, 59 patients without HF and a control group of 40 volunteers - use of 2 scales: Multidimensional Fatigue Inventory, Social Provisions Scale and SF-36 for quality of life - univariate analysis and logistic regression	- Multidimensional Fatigue Inventory	HF patients obtained higher mean scores for fatigue and most SF-36 subscales than the control group
2007 <sup>(12)</sup>	Examine the role of clinical and psychological characteristics as predictive factors of fatigue in cases of HF	- 136 outpatients - use of instruments to assess depression symptoms, personality aspects and cardiac symptoms, besides fatigue assessment scales - one initial assessment and another after 12 months of follow-up - association tests between measures of variables obtained during initial fatigue assessment and exertion fatigue after 12 months. Regression analyses to study the prediction of fatigue and exertion fatigue	- The Dutch Exertion Fatigue Scale (DEFS) - The Fatigue Assessment Scale (FAS)	Exertion fatigue after 12 months of follow-up was predicted by exercise capacity, dyspnea, hypertension and depression symptoms. General fatigue was predicted by dyspnea, depression symptoms, D-type personality and sleep problems
2006 <sup>(13)</sup>	Assess the Swedish version of the MLHF in elderly people with HF and use it to describe the impact of HF in this population's daily life	- 357 patients (65-99 years) - cross-sectional study - application of MHLF - descriptive statistics and use of chi-square test	- Use of Minnesota Living Heart Failure (MLHF) questionnaire, with questions about fatigue	Most common problems in the physical dimension were especially fatigue and breathing difficulty
2006 <sup>(14)</sup>	Describe factors and interventions that influence the quality of life of HF patients.	- literature review - 58 articles - systemized search in databases	Not described	Fatigue can easily be related with insomnia and can also be considered a symptom of depression
2006 <sup>(15)</sup>	Analyze the correlation between dyspnea and other symptoms, including fatigue	- 76 outpatients - self-report questionnaire - Pearson's correlation	Three-item scale: degree of fatigue, intensity of fatigue and anguish associated with fatigue Correlation and regression tests	Dyspnea was significantly related with fatigue, intensity of fatigue and general health perception. The three symptoms explained 38% of dyspnea variance
2006 <sup>(16)</sup>	Assess differences between patients with and without HF in terms of anxiety and depression; - verify the association between anxiety, depression and physical symptoms of HF, including fatigue; - verify to what extent physical symptoms and HF explain anxiety and depression	- 61 patients with HF - 57 patients without HF - 3 self-report questionnaires - correlation and hierarchical regression	- Multidimensional Assessment of Fatigue Scale (MAFS)	No differences were found in terms of anxiety and depression between outpatients and the group used for comparison Sleep disorders, fatigue and dyspnea were significantly higher in HF patients when compared with the control group. Moderate correlations were found between fatigue, sleep disorders, anxiety and depression, independently of HF
2006 <sup>(17)</sup>	Verify to what extent HF symptoms contribute to quality of life	-1906 patients HF-II, III and IV -secondary data analysis - Multivariate analysis	- Use of Minnesota Living Heart Failure questionnaire with questions about fatigue	Fatigue explains 38% of variance in MHLF scores
2005 <sup>(4)</sup>	Assess the importance of self-reported symptom intensity as predictive factors of responses in cases of HF	- 3029 patients - multicenter study - uni and multivariate analysis	- Use of five-point scale to assess symptoms like dyspnea and fatigue. The scale items were asymptomatic, climbing stairs at normal rhythm, walking at normal rhythm on a level surface, walking slow on a level surface and at rest	Dyspnea, orthopnea and fatigue were significant predictors of increased hospitalization and mortality
2004 <sup>(18)</sup>	Examine differences in quality of life between four HF patient groups based on age and gender and assess the relation between age, gender and changes in reported quality of life during a six-month period	- 165 patients - use of MLHF and CHQ - 2 measures with 26-week interval.	- Use of MLHF and CHQ (Chronic Heart Failure Questionnaire) with questions about fatigue	Women younger than 65 years displayed a more intense improvement in fatigue than women aged 65 years or older
2004 <sup>(3)</sup>	Quantify potentially serious risks of adverse cardiovascular effects caused by beta blocker therapy in HF patients with systolic dysfunction	- literature review - 148 articles - systemized search in databases	Not described	Beta blocker therapy was associated with increased risks for hypotension, dizziness and bradycardia, while no significant association was found between fatigue and the use of this therapy
2004 <sup>(19)</sup>	Identify the correlation between psychological stressors in elderly patients with heart failure	- 227 patients (age >60 years) - cross-sectional study - statistical analysis with multiple regression	- use of dyspnea and fatigue scales from Chinese version of Chronic Heart Failure Questionnaire (CHQ)	High levels of fatigue and perceived low emotional support were identified
2003 <sup>(20)</sup>	Describe "tolerability" to beta blockers among HF patients	- 268 patients - monitoring of collateral effects	Patient reports	The study evidenced weight gain, fatigue, dizziness and dyspnea as the most common collateral effects Fatigue and hypotension were the most common reasons to stop using beta blockers
2003 <sup>(21)</sup>	Describe the symptoms of HF patients in the last 6 months of their lives	- 80 patients - retrospective study - descriptive statistics	Analysis of medical and nursing records	Lack of air was the most common symptom Fatigue was the third most frequent symptom

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Table 1 – Continuation...

Year	Objective	Method	Fatigue assessment method	Main results
2002 <sup>(22)</sup>	Compare fatigue descriptions during interviews with elderly HF patients with nursing report data at a clinical outpatient clinic	- 158 patients / 56 nursing records - descriptive study - application of Fatigue Interview Schedule (FIS).	- use of Fatigue Interview Schedule (FIS) with questions on physical sensations, impact on functional performance, mental sensation and affective feeling	Results indicate poor agreement between patients' descriptions and satisfactory reports on fatigue Cognitive characteristics of fatigue were rarely related, but were more frequent during interviews with patients
2002 <sup>(23)</sup>	Determine the association between beta blockers and symptoms like depression, fatigue and sexual dysfunction	- systematic review - 15 clinical randomized trials - systematic search of randomized studies in databases	Any term similar to fatigue (tiredness, lethargy, asthenia)	Fatigue reported by patients was assessed in 10 studies, which included 17,682 patients. 33.4% in the beta blocker group and 30.4% in the placebo group reported fatigue Specialists suggest that the development of fatigue in patients using beta blockers can result from its effects in the central nervous system and the possibility of decreased cardiac output associated with the therapy
2002 <sup>(24)</sup>	Describe and compare fatigue experiences in a group of elderly men and women with severe heart failure	- 158 patients - descriptive study - application of Fatigue Interview Schedule	- use of a modified version of the FIS, which included an interview about the fatigue experience, assessment of fatigue level and intensity and general mood	Descriptions of fatigue experiences showed that women tend to report more intense fatigue, but no statistically significant differences between genders were found for fatigue intensity
1999 <sup>(25)</sup>	Assess the effect of the AT-1 angiotension II receptor on exercise tolerance and HF symptoms	- 844 patients (HF II and III) - multicenter randomized double-blind study	- Fatigue scores were determined by measuring impairment in activities of daily living	All doses of the tested drug significantly improved fatigue and dyspnea scores in relation to the placebo
1999 <sup>(26)</sup>	Identify factors related to fatigue Summarize fatigue-related factors and also explore the multidisciplinary of the research model that explains fatigue and the development of interventions	- systematic review - 53 studies - systemized search in databases	Does not apply	Sociodemographic factors, reported cure and reported care affect fatigue positive or negatively, and efforts aim to construct interventions that decrease or eliminate fatigue
1998 <sup>(27)</sup>	Develop and test fatigue measurement scales (DUFs and DEFS) among HF patients	- 138 patients - cross-sectional study - elaboration of check list of fatigue-related activities	Does not apply	DUFs is adequate as a measurement instrument for the fatigue diagnosis and permits comparisons of fatigue results between patient groups DEFS can be used in clinical practice to measure exertion fatigue. Fatigue was more intense in women than men; in people with lower education levels; with a body mass index of 25 or higher and in cases of dyspnea
1995 <sup>(28)</sup>	Determine if there were differences between HF patients who interrupted a physical test due to dyspnea and fatigue	- 222 ergonomic tests - use of physical activity protocol	Not described	Fatigue was the reason to stop exercising for 62 patients, while 160 patients stopped due to dyspnea
1995 <sup>(29)</sup>	Examine how psychological factors and physical symptoms contributed to fatigue variations in elderly women with HF	- 80 women - application of Cohen-Hoberman Inventory of Physical Symptoms at two times (with an 18-month interval)	- Use of Cohen-Hoberman Inventory of Physical Symptoms - modified version, with scales to assess symptoms like fatigue, chest pain, being short of breath and palpitations	Fatigue was reported more than other physical symptoms at both times
1993 <sup>(30)</sup>	Refine and understand findings from an original study that focused on HF-related fatigue description	- 38 patients - descriptive study - application of modified Fatigue Interview Schedule (FIS)	- Use of Fatigue Interview Schedule (FIS), modified from the original study to include measures of social integrity, three fatigue intensity measures, mood assessment and activity level according to the New York Association (NYHA).	Fatigue occurred as a result of stress, physical activity and disease
1993 <sup>(31)</sup>	Determine if exertion fatigue is more related to musculoskeletal dysfunction than to blood flow reduction	- 34 patients - protocol with ergometric test - cardiac output by thermodilution - blood flow measurement of MMII	Not described	A considerable percentage of patients with HF developed exertion fatigue, due to musculoskeletal dysfunction more than to decreased blood flow to the musculoskeletal system
1989 <sup>(32)</sup>	Develop a scale to measure the impact of dyspnea and fatigue on the quality of life of HF patients	- 362 patients - discriminant validity - development of items based on another study proposal	Does not apply	The scale was validated to provide a dyspnea-fatigue index
1986 <sup>(33)</sup>	Examine if exertion responses in HF patients are similar and if differences in metabolism, ventilation and hemodynamics during two exercise types can explain variations in feelings of fatigue and dyspnea	- 25 patients (HF II or III) - fast and slow exercise protocol.	Not described	Slow exercises - 18 patients, the exercise was interrupted due to fatigue and in 5 due to fatigue associated with dyspnea Fast exercises - 10 patients performed both protocols, fast and slow exercises, with a view to comparison These 10 patients were in the group that stopped the slow exercise protocol due to fatigue

## DISCUSSION

Teaching interventions and heart failure patient assessment are fundamental to maintain their stability<sup>(34)</sup> and reduce the negative impacts of the disease in the public health system<sup>(35)</sup>. These study results support a better understanding of fatigue, in view of its impact on this population's quality of life.

The number of studies that complied with the search and selection criteria increased over time, which indicates increasing interest in fatigue related to heart failure. Quantitative research predominated.

A wide range of fatigue assessment strategies as a variable in the included studies was observed, and three studies<sup>(28,31,33)</sup> contained no description of how this variable was studied. In some studies, fatigue was assessed through a scale created or adapted by the author<sup>(4,15,25)</sup>; in others, the author merely describes the patients' reports<sup>(20)</sup> or records in patient files<sup>(21)</sup>, and yet others used full<sup>(10,12,16,18,30)</sup> or partial versions of standardized instruments<sup>(13,17,19,22,24,29)</sup>. Two of the studies under analysis aimed to develop fatigue assessment instruments<sup>(27,32)</sup>. Four literature reviews<sup>(3,14,23,26)</sup> were included which, although they presented results on fatigue in heart failure, did not report on how fatigue had been assessed in the research included in their reviews.

The range of methods to assess fatigue in heart failure patients entails difficulties to integrate results on its frequency, characteristics and related factors. Considering this restriction, and also that of research samples with different characteristics, the included studies showed that the frequency of fatigue in heart failure patients is high<sup>(19,21)</sup> (ranging from 69 to 88%)<sup>(13,21,30)</sup>, that fatigue figured among the most frequent symptoms<sup>(21)</sup>, that it was the most frequent of all physical symptoms<sup>(29)</sup> and that fatigue was more intense in heart failure patients than in control groups<sup>(11,16)</sup>. The frequency of dyspnea as a symptom was similar to that of fatigue<sup>(13)</sup>. Differences between the research samples in terms of age, treatment type and heart failure class, for example, do not permit synthesized fatigue intensity or frequency results. Another barrier is that some studies presented fatigue in terms of intensity and others in terms of presence or absence. Moreover, the criteria used to classify the presence or absence of fatigue could not always be identified when using instruments with ordinal fatigue scores, that is, when fatigue was treated as a continuous variable.

Fatigue is experienced in other acute and chronic conditions, and also among people without diseases. One important aspect for knowledge about fatigue in cases of heart failure is to contrast its frequency and other characteristics with what occurs in the general population and in other diseases.

As for related factors, fatigue was studied in connection with quality of life and disease evolution, physical activity, social and demographic variables, comorbidities, treatment and the evaluator (patient or nurse).

### Quality of life and disease progression

Fatigue in heart failure is a factor associated with limitations to maintain a lifestyle that is compatible with a desirable sense of autonomy and independence. In a study of 1906 heart failure patients, fatigue explained 38% of variance in *quality of life* scores<sup>(17)</sup>. Fatigue intensity was observed as an independent predictive factor of deterioration in heart failure<sup>(4)</sup>.

### Physical activity

*Physical activity* was identified as one of the predictive factors of fatigue in heart failure patients after 12 months of follow-up, together with *dyspnea*, *hypertension* and *depressive symptoms*<sup>(12)</sup>. Fatigue, in turn, was identified as a limiting factor of *physical activity*<sup>(28,30,31,33)</sup> and this limitation can exert an important impact on the perceived quality of life of heart failure patients. These results underline the aspect highlighted in the qualitative study included in this review, i.e. that fatigue is a circular process in which its consequences enhance the fatigue itself<sup>(9)</sup>, as they suggest that physical activity or exercise capacity somehow contribute to the occurrence or intensity of fatigue, while fatigue also influences physical activity or exercise capacity. These results also indicate the importance of further exploring the association between these variables and the effect of interventions related to physical activity and exercise capacity in studies involving heart failure patients. Exertion fatigue seems to be more influenced by *musculoskeletal dysfunction* than by decreased blood flow to the musculoskeletal system<sup>(31)</sup>.

### Social and demographic variables

The results of a study among 138 heart failure patients showed that fatigue was significantly more



intense among *women*<sup>(27)</sup>. On the other hand, in another study of 158 patients over 65 years of age, no significant difference was found, although mean fatigue intensity had been higher among women than men<sup>(24)</sup>. As to *age*, one study found no difference in fatigue intensity between patients older than 60 years and those aged 60 or less<sup>(27)</sup>. That same study found higher intensity among patients with low *education level* and no difference in fatigue intensity in terms of marital status<sup>(27)</sup>.

The perceived *degree of emotional support* in 227 heart failure patients older than 60 years was associated with higher fatigue intensity levels<sup>(19)</sup>.

#### Comorbidities

*Dyspnea* was the main symptom associated with fatigue<sup>(4,12,15-16,27)</sup>, which was also associated with *sleep disorders*<sup>(14,16)</sup> and *depressive symptoms*<sup>(12,14-15)</sup>. In a study of 38 heart failure patients, reports of *stress* as one of the factors increasing fatigue were very frequent<sup>(30)</sup>. A study that compared fatigue and other variables between samples with and without heart failure showed associations between fatigue, *anxiety* and *depression*, independently of the sample, and that the three partially explained dyspnea variability in the heart failure sample<sup>(16)</sup>. Another factor correlated with fatigue in research was the *body mass index* – when higher than or equal to 25, fatigue was more intense<sup>(27)</sup>.

#### Treatments

Three studies included in this review<sup>(3,20,23)</sup> looked at the relation between the use of *beta blockers* and fatigue in heart failure patients. One of them<sup>(20)</sup> found that fatigue and hypotension were the most frequent motives to stop treatment, but a change in the beta blocker decreased the frequency of discontinuity. One review study found no significant association between fatigue and use of beta blocker, that the discontinuity of beta blocker was lesser than in the placebo group and that beta blocker therapy was associated with a decrease in medication discontinuity due to any cause<sup>(3)</sup>. In another review, beta blocker use was significantly associated with an annual increase in the risk of fatigue reports, corresponding to one additional fatigue report for every 57 patients treated each year<sup>(23)</sup>. In patients with heart failure who were taking beta blockers,

fatigue frequency was 33.4%, against 30.4% in patients who were not taking beta blockers<sup>(23)</sup>. In one of the studies included, which analyzed the effect of using the *AT-1 angiotension II receptor* on exercise tolerance and other heart failure symptoms in comparison with a placebo group, found a significant improvement in fatigue<sup>(25)</sup>.

#### Evaluator

In one of the studies<sup>(24)</sup>, low agreement levels were found between patients' verbal descriptions and the content of nursing records on fatigue characteristics. The patients put stronger emphasis on the physical characteristics of fatigue, while nurses emphasized mental dimensions more frequently in their records. Cognitive characteristics of fatigue, such as concentration difficulty and lack of interest in the nearby environment, were rare in the records and more common in patient reports.

## CONCLUSION

This review revealed increasing interest in fatigue in cases of heart failure and that different strategies have been used to characterize, assess and insert it in broader conditions. However, fatigue frequency data appear as secondary information in studies with other goals, which indicates the need for empirical studies to examine fatigue frequency and intensity in heart failure patients.

Difficulties to integrate results on fatigue characteristics, due to the range of assessment instruments, demand researchers' attention. Perhaps it is interesting to set cut-off points for fatigue assessment instruments. This would not only offer results on fatigue intensity, but also data on its frequency. Despite limitations to integrate the results of the analyzed studies, fatigue frequency ranged from 69 to 88%<sup>(13,30)</sup>, with higher intensity levels than in control groups<sup>(16)</sup>.

Variables studied in relation with fatigue were quality of life and disease evolution, physical activity, social and demographic variables, comorbidities and treatment. Fatigue is generally accompanied by dyspnea and associated with psychosocial variables. Concern with psychosocial variables seems to be more recent, as it was more common in research published after the year 2000. Well-designed studies

are needed to accumulate results on factors correlated with fatigue, as controversial results were found in the analyzed studies.

Understanding fatigue involves the study of mechanisms potentially associated with its genesis and expression. In cases of heart failure, fatigue is attributed to low muscle perfusion. Some studies invest

in the identification of structural and functional alterations in skeletal muscles, besides low perfusion, which may contribute to the fatigue symptom. The greatest challenge is to find interventions capable of helping heart failure patients to deal with a symptom that seems to be frequent and intense and affects their lives in important and unwanted ways.

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