

Association between self-care and hospital readmissions of patients with heart failure

Associação entre autocuidado e reinternação hospitalar de pacientes com insuficiência cardíaca
Asociación entre la auto-atención y reingresos hospitalarios de pacientes con insuficiencia cardíaca

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How to cite this article:

Linn AC, Azzolin K, Souza EN. Association between self-care and hospital readmissions of patients with heart failure. Rev Bras Enferm [Internet]. 2016;69(3):469-74. DOI: <http://dx.doi.org/10.1590/0034-7167.2016690312i>

Submission: 07-15-2014

Approval: 12-26-2015

ABSTRACT

Objective: to assess the association between self-care and the number of hospital readmissions of patients with heart failure (ADHF) and test the applicability of two self-care assessment tools. longitudinal study, performed in a cardiology reference hospital in southern Brazil. **Method:** it included 82 patients with a mean age of 61.85 ± 12.33 years, 57.3% male. The mean score of self-care assessment found the scales European Heart Failure Self-care Behavior Scale and Self-care Scale for Patients with Heart Failure was unsatisfactory. **Results:** it was observed an average of 2.57 ± 1.66 rehospitalization last year for decompensated heart failure. There was a correlation between self-care scores with the number of hospital readmissions for decompensated HF. Education and age were associated to self-care of HF patients. **Conclusion:** both scales assess self-care in a relevant way, and correlated their indexes. **Descriptors:** Heart Failure; Self-Care; Hospitalization; Nursing; Chronic Disease.

RESUMO

Objetivo: verificar associação entre o autocuidado e o número de reinternações hospitalares de pacientes com diagnóstico de insuficiência cardíaca (IC) descompensada, bem como testar a aplicabilidade de dois instrumentos de avaliação de autocuidado. Estudo longitudinal, realizado em um hospital de referência cardiológica do sul do Brasil. **Método:** foram incluídos 82 pacientes, com idade média de $61,85 \pm 12,33$ anos, 57,3% do sexo masculino. O escore médio da avaliação de autocuidado encontrado pelas escalas *European Heart Failure Self-care Behavior Scale* e a Escala de Autocuidado para Pacientes com Insuficiência Cardíaca foi insatisfatório. **Resultados:** foi verificada uma média de $2,57 \pm 1,66$ reinternações hospitalares no último ano por descompensação da IC. Houve correlação entre os escores de autocuidado com número de reinternações hospitalares por IC descompensada. Escolaridade e idade mostraram-se associadas ao autocuidado dos pacientes com IC. **Conclusão:** ambas as escalas avaliam o autocuidado de forma relevante, sendo correlacionados os seus índices. **Descritores:** Insuficiência Cardíaca; Autocuidado; Hospitalização; Enfermagem; Doença Crônica.

RESUMEN

Objetivo: evaluar la asociación entre el autocuidado y el número de reingresos hospitalarios de pacientes con insuficiencia cardíaca (ICAD) y probar la aplicabilidad de los dos instrumentos de evaluación de autocuidado. estudio longitudinal, realizado en un hospital de referencia de cardiología en el sur de Brasil. **Método:** se incluyó a 82 pacientes con una edad media de $61,85 \pm 12,33$ años, el 57,3% hombres. La media de puntuación de la evaluación de autocuidado encontró el escalas insuficiencia cardiaca Self-care Escala de Conducta Europeo y de la Escala sobre el cuidado personal para pacientes con insuficiencia cardíaca fue insatisfactoria. **Resultados:** se observó un promedio de $2,57 \pm 1,66$ rehospitalización año pasado para la insuficiencia cardíaca descompensada. Hubo una correlación entre las puntuaciones de autocuidado con el número de reingresos hospitalarios por IC descompensada. La educación y la edad se asociaron a los cuidados de los pacientes con IC. **Conclusión:** las dos escalas evaluarán el autocuidado de forma relevante, y se correlacionó sus índices. **Descritores:** Insuficiencia Cardíaca; Autocuidado; Hospitalización; Enfermería; Enfermedad Crónica.

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INTRODUCTION

The clinical decompensation is the leading cause of hospitalization in patients with heart failure (HF)⁽¹⁻³⁾. In treating patients scenario with HF, adherence to treatment is defined as the following guidelines for proper and regular use of medications, low-sodium diet, physical exercise, engaging in preventive care and self-monitoring of signs and symptoms, component one broader set called self-care⁽⁴⁾.

Often, hospital readmissions are preventable, either by the individual himself, adhering to medication and self-care actions, as the health system, with proper management by the multidisciplinary team⁽⁵⁻⁶⁾. A study of patients who were hospitalized for HF acutely decompensated showed that among the main causes is the poor adherence to drug therapy, a fact that is related to the self-care deficit⁽⁷⁾. Another study that included 400 patients with HF showed the positive impact of skills for self-care in health status due to patients have adequate knowledge about the disease and ease to identify signs and symptoms of decompensation early seeking the assistance of a health professional, thus reducing the number of readmissions for decompensated heart failure⁽⁸⁾.

It is known that the most influential factors in the development of self-care skills are knowledge of the IC, experience and self-care skills to the new reality of life caused by the condition and compatibility behavior in the social aspects and the patient's own⁽⁹⁾. Therefore, educational actions become a central component to be worked by health professionals with those individuals to improve the management of their own care and, therefore, increase the quality of life and decreased mortality due to HF⁽⁹⁾.

In this sense, it is necessary to identify the self-care actions and its relation to the hospitalization rates of patients whose socio-economic and social context is different from those evaluated in previous studies, which are originated from developed countries. In Brazil, two scales were validated for verification of self-care in patients with HF, one European and one American. Both showed adequate psychometric measures, but with systematic evaluation a little different.

Verification of self-care scores, measured by validated instruments, enables weaknesses are identified in relation to self-care actions, so that interventions aimed at hospital and outpatient follow-up of these patients are subsequently developed with a view to reducing rates readmissions for HF acutely decompensated. The objective of this study was to assess the association between self-care and the number of hospital readmissions of patients hospitalized for decompensated HF sharply and test the applicability of two self-care assessment tools.

METHOD

Retrospective longitudinal study, quantitative, developed in a reference cardiology hospital in southern Brazil. adult patients were included, of both sexes admitted for decompensated heart failure (DHF). Patients with communication barriers, degenerative neurological disease or patients who

refused to participate in the study. The sample was calculated for a study with 80% power, estimated to achieve greater or equal to 0.3 correlation between self-care variables and the number of previous admissions, being necessary to include 113 patients.

From an active search for patients in clinical units for ICD were identified eligible and then held individual approach to the bedside. After the acceptance of the patient, the data were collected through a questionnaire developed for this study, with questions about sociodemographic, clinical and related to self-care (1st stage). Self-care was assessed by both scales validated in Brazil, European Heart Failure Self-care Behaviour Scale (EHFScBS)⁽¹⁰⁾ and Self Care Scale for Patients with Heart Failure (EAC-IC)⁽¹¹⁾.

The ESCS is composed of 12 questions with Likert responses, ranging from 1 (strongly agree) to 5 (strongly disagree). The EHFScBS, Brazilian version, measures three aspects: adherence to treatment, aid application and daily activities. The minimum total sum is 12 and the maximum 60 points, and the lower the score, the better the self-care actions the patient. There defined cutoff point.

The EAC-IC consists of three sections, called A, B and C. Section A consists of 10 questions related to the frequency with which the patient follows the guidance received on IC. In section B there are three key questions about heart failure, with the options yes / no to the presence of common signs and symptoms. If so, some questions are directed to the patient about the conduct of this for the presence of signs and symptoms, which have characterized its response on a Likert scale ranging from 1 (not recognized) to 4 (recognized immediately). In section C for six questions about the confidence of the patient and the relevant aspects of knowledge about their disease, symptom management and adherence to drug therapy, also with answers on a Likert scale. Unlike EHFScBS, the higher the score the sum of the sections of the EAC-IC self-care best index of patients. It is considered an appropriate self-care when the EAC-IC score is ≥ 70 .

The outcome number of hospital admissions for DHF last year (12 months before the current admission) was found in the medical records, the second stage of data collection, after the patient approach.

The project was approved by the Research Ethics Committee of the institution under the number 11-885. All patients received and signed the free and informed consent.

The data were stored in Excel spreadsheet for Windows and later analyzed in Statistical Package for Social Sciences for Windows 19. To check the correlation between self-care and the number of previous hospitalizations for DHF, as well as the correlation between the two scales the Spearman correlation was used.

RESULTS

82 patients were included, most male and 47 (57.3%) with mean age of $61,85 \pm 12,33$ years. The average schooling was $6,49 \pm 2,82$ years of study. Of the patients interviewed, 35 (42.7%) were married / common-law marriage, 24 (29.3%)

widowers, 19 (23.2%) divorced and 4 (4.9%) singles. Most patients, with regard to professional status, was retired-55 (67.0%) or sick leave 18 (21.9%) with only 8 (9.7%) of active patients in the market work. The clinical characteristics are described in Table 1.

Table 1 – Clinical characteristics of patients hospitalized for decompensated heart failure (N = 82), Porto Alegre, Rio Grande do Sul, Brazil, 2012

Characteristics	n(%)
Functional Class (NYHA)	
I	4(4.9)
II	18(22.0)
III	40(48.8)
IV	20(24.4)
IC (years)*	9.41 ± 8.43
Comorbidities	
Hypertension	70(85.4)
Diabetes mellitus	25(30.5)
Dyslipidemia	19(23.2)
Smoking	10(12.2)
Chronic Renal Failure	7(8.5)
Chronic Obstructive Pulmonary Disease	1(1.2)
Acute Myocardial Infarction Early	64(78.0)
Coronary artery bypass surgery or valve prior	53(64.6)

Note: * Variable expressed as mean ± standard deviation.

The mean score of self-care in the sample obtained by the EHF CBS was 33,32 ± 6,23, with a minimum 19 and maximum 48 points. There was a moderate correlation between self-care scores EHFScBS with age ($r_s = 0.301$, $p = 0.006$) and education ($r_s = -0.278$, $p = 0.012$). Thus, the lower the age of the patient and more years of study, most is self-care.

EAC-IC average self-care score of patients was 58,66 ± 7,66 (minimum 37 and maximum 77). Only 9 (11%) patients had a satisfactory self-care scores (> 70%).

Regarding the outcome of the study, an average was verified

Table 2 – European Heart Failure Self-care Behaviour Scale (N = 82), Porto Alegre, Rio Grande do Sul, Brazil, 2012

Itens	n(%)				
	1	2	3	4	5
I check my weight every day	8(9.8)	9(11)	22(26.8)	16(19.5)	27(32.9)
If I'm short of breath I have quiet	13(15.9)	15(18.3)	39(47.6)	2(2.4)	13(15.9)
If my breathlessness increases, I contact my doctor / nurse	15(18.3)	16(19.5)	30(36.6)	13(15.9)	8(9.8)
If my feet and legs are slower than normal I contact my doctor / nurse	9(11)	29(35.4)	22(26.8)	10(12.2)	12(14.6)
If I gain 2 kg in a week I contact my doctor / nurse	3(3.7)	10(12.2)	16(19.5)	27(32.9)	26(31.7)
We limit the amount of liquid I take (no more than 1.5 to 2 l / day)	18(22)	33(40.2)	19(23.2)	2(2.4)	10(12.2)
I do rest during the day	21(25.6)	37(45.1)	16(19.5)	2(2.4)	6(7.3)
If I experience increased tiredness I contact my doctor / nurse	10(12.2)	10(12.2)	47(57.3)	8(9.8)	7(8.5)
I ask a low-salt diet	31(37.8)	22(26.8)	22(26.8)	5(6.1)	2(2.4)
I take my medication as prescribed	69(84.1)	6(7.3)	3(3.7)	1(1.2)	3(3.7)
I make the flu vaccine every year	32(39.0)	15(18.3)	5(6.1)	8(9.8)	22(26.8)
I exercise regularly	1(1.2)	9(11)	12(14.6)	35(42.7)	25(30.5)

2,57 ± 1,66 previous hospitalizations (last year) due to DHF, with a minimum of 3 and maximum of 7 hospitalizations per patient. When the correlation between self-care scores with the average of previous hospitalizations for DHF showed up for EHFScBS a moderate inverse correlation ($r_s = -0.355$, $p = 0.001$) and the EAC-IC a small inverse correlation ($r_s = -0.298$; $p = 0.007$). There was a significant association between self-care score of both scales with the outcome in question.

When correlated the mean scores of the two scales of self-care was found small to moderate correlation ($r = 0.246$; $p = 0.026$).

Box 1 – Self-care Scale for Patients with Heart Failure, Porto Alegre, Rio Grande do Sul, Brazil, 2012

Section A	Never or rarely 1	Sometimes 2	Often 3	Always or daily 4	
1. Do you weigh?	34(41.5)	18(22)	17(20.7)	13(15.9)	
2. Check if your ankles are swollen?	2(2.4)	12(14.6)	20(24.4)	48(58.5)	
3. Try to avoid getting sick (eg to get vaccinated against the flu, avoid contact with sick people)?	23(28)	13(15.9)	12(14.6)	34(41.5)	
4. Performs some physical activity?	28(34.1)	42(51.2)	7(8.5)	5(6.1)	
5. Assiduous in consultation with doctor or nurse?	2(2.4)	0(0)	18(22)	62(75.6)	
6. Do you eat a diet with little salt?	6(7.3)	27(32.9)	26(31.7)	23(28)	
7. Practise it for 30 minutes?	31(37.8)	32(39)	8(9.8)	11(13.4)	
8. Forgets or fails to take any of your medicines?	36(43.9)	6(7.3)	11(13.4)	29(35.4)	
9. Calls foods with little salt when eating out or visiting someone?	53(64.6)	16(19.5)	8(9.8)	5(6.1)	
10. Use a system (pill box, reminders) to help you remember your medicines?	1(1.2)	3(3.7)	22(26.8)	56(68.3)	
Section B					
11. If you had trouble breathing or swollen ankles in the last month ...	I did not recognize 0	It took me a lot to recognize 1	It took me a while to recognize 2	Quickly recognized 3	Immediately recognized 4
How quickly you recognized them as a symptom of heart failure?	-	3(3.7)	10(12.2)	32(39)	37(42.1)
How likely are you to try one of these resources?	-	Improbable 1	Not likely 2	Likely 3	Very likely 4
12. Reduce the salt in your diet	-	28(34.1)	28(34.1)	15(18.3)	11(13.4)
13. Reduce intake of liquids	-	20(24.4)	20(24.4)	35(42.7)	7(8.5)
14. Take a diuretic more	-	46(56.1)	17(20.7)	10(12.2)	9(11)
15. Contact your doctor or nurse for guidance	-	5(6.1)	17(20.7)	40(48.8)	20(24.4)
16. Think of the above features you tried the last time you had trouble breathing or swollen ankles:	I have not tried anything 0	Not sure 1	I have little certainty 2	I'm sure 3	I'm pretty sure 4
Are you sure that this feature helped?	12(14.6)	17(20.7)	32(39)	16(19.5)	5(6.1)
Section C					
In general, you are confident about:	Not confident 1	Somewhat confident 2	Very confident 3	Extremely confident 4	
1. Being free of symptoms of heart failure?	27(32.9)	39(47.6)	7(8.5)	9(11)	
2. Follow the recommended treatment?	4(4.9)	9(11)	38(46.3)	31(37.8)	
3. Assess the importance of your symptoms?	2(2.4)	22(26.8)	36(43.9)	22(26.8)	
4. Recognize changes in health if they occur?	3(3.7)	5(6.1)	17(20.7)	57(69.5)	
5. Do something that can relieve your symptoms?	7(8.5)	38(46.3)	22(26.8)	15(18.3)	
6. assess whether a drug works?	3(3.7)	7(8.5)	53(64.6)	19(23.3)	

DISCUSSION

This study showed, in the studied sample, the lower the self-care score of patients, the greater the number of hospitalizations for HF acutely decompensated last year. In addition, younger patients with more years of education had higher self-care scores.

A recent cohort showed that HF is the second leading cause of preventable hospitalization, among the most common medical diagnoses, accounting for 21.6% of hospital readmissions⁽⁴⁾, with profile of patients similar to our sample, the majority of male, mean age of 61 years.

The variables such as gender, age and education have been shown in the literature as contributing factors of worse outcomes in cardiac patients. In a study conducted in six US hospitals with 209 patients with HF, seven variables were analyzed and only two were predictive of self-care: schooling ($p=0.009$) and severity of symptoms ($p=0.046$)⁽¹²⁾. In another study, which evaluated 155 patients with HF with a similar goal, also met schooling as a predictor of self-care ($p=0.002$)⁽¹³⁾. As in our study, the higher the education of the patient, the greater the ease of this to understand its pathology, signs / symptoms and greater ease in making decisions for the promotion, protection and recovery of their health. In contrast, a systematic review conducted in 2010 concluded that the effects of contextual factors such as age, marital status, education, among others, need to be further studied⁽¹⁴⁾.

More recently, an integrative literature review, in order to verify reported symptoms, experience with the disease and self-care in elderly patients with heart failure, suggests that the poor quality of life and frequent contact with severe symptoms make them more dependent elderly caregivers, indicating inadequate self-care⁽¹⁵⁾.

As the ideal instrument for self-care assessment in hospitalized patients, the correlation between the scores of both scales used was low to moderate. However, some considerations are necessary. For the assessment of management and self-care trust in the EAC-IC are present issues as being free of symptoms of heart failure, recognize a symptom of the disease, decide to ingest a diuretic plus or reduce salt intake. Such questions when directed to patients hospitalized for decompensated disease become inconsistent because individuals are in recovery phase, and often also with symptoms of HF. These management and trust issues lead us to the EAC-IC as an ideal scale for use in ambulatory heart failure or in situations in which patients are not hospitalized. Thus, the scale evaluate consistently self-care and aspects that influence the day to day these individuals.

EAC-IC, the question of requesting food with little salt when outside their own home could include a 'not applicable' option because most of the individuals included in the study reported not leaving home to make a meal. As already reported in a previous study⁽¹⁰⁾, the question about using a system for remembering to take medications does not imply a better self-care, for many patients, the chronic nature that HF is, ultimately incorporate in their day to day regular use of medications, without the need for any system to remind them.

The EHFScBS raises questions about the maintenance of self-care for patients with HF and has considerable applicability for individuals who are admitted to hospital for decompensated disease. However, as the EAC-IC, EHFScBS could bring not applicable option when doing the questioning of the patient's actions when he takes 2 kg in a week, because there is no weekly weigh on the part of patients, questioning found early scale, knowledge of weight weight gain becomes nonexistent. The study translated, adapted and validated the EHFScBS for use in Brazil states that the scale has a limitation not contemplate important aspects such as the recognition of symptoms, decision-making and confidence of the patient, not just evaluating self-care as a whole⁽¹⁰⁾. However, it can be used in large scale to evaluate basal self-care of patients with heart failure, permitting the evaluation and lifting practices essential for maintaining the health of these patients.

Faced with structural differences and content, yet scales so are a valuable tool in clinical practice, with correlated and evaluation focused on the self-care of patients with heart failure. Literature data report as a cardioprotective self-care because it is complementary to optimal clinical and pharmacological treatments to slow the progression of heart failure and its unwanted results, such as frequent episodes of clinical decompensation that leads to rehospitalization⁽¹⁶⁾. Still, in addition to medication adherence, self-care in patients with heart failure includes diet acceptance with salt and water restriction, prevention actions and monitoring signs and symptoms by the patients themselves, then the ability to define appropriate conduct on such changes health⁽¹¹⁾.

The promotion of self-care becomes target for nurses with the use of educational methodologies for health, aiming at their improvement. The educational nursing intervention in its various forms of applicability, has demonstrated beneficial effect on self-care actions of patients with heart failure and consequent reduction in the number of readmissions for decompensated disease, and aid in the quest of promotion.

CONCLUSION

There was association between self-care and the number of hospital admissions of patients hospitalized with acutely decompensated heart failure. Furthermore, age and education relate to self-care. The correlation between the scores obtained by the scales European Heart Failure Self-care Behaviour Scale and Self Care Scale for Patients with heart failure showed weak to moderate, which can be attributed to inpatient status. Their characteristics are presented in this study and may guide the suitable choice for use at different times is that the patient, or not admitting.

It is believed that nurses should work in clinical practice observing the individual as a whole, considering the active participant in your health, not only prioritizing the re-establishment of clinical status, but the understanding that self-care practices should be increasingly consolidated in these patients, in order to avoid or reduce the number of readmissions for decompensated disease and improve their quality of life.

REFERENCES

- Howlett JG. Acute heart failure: lessons learned so far. *Can J Cardiol* [Internet]. 2011[cited 2014 Jun 20];27(3):284-95. Available from: <http://www.onlinecjc.ca/article/S0828-282X%2811%2900169-3/abstract>
- Yancy C, Fonarow G. Quality of care and outcomes in acute decompensated heart failure: the ADHERE registry. *Curr Heart Fail Rep* [Internet]. 2004[cited 2014 Jun 20];1(3):121-8. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/16036035>
- Albanesi Filho FM. What is the current scenario for heart failure in Brazil? *Arq Bras Cardiol* [Internet]. 2005[cited 2014 Jun 20];85(3):155-6. Available from: http://www.scielo.br/pdf/abc/v85n3/en_25996.pdf
- Donzé J, Lipsitz S, Bates DW, Schnipper J. Causes and patterns of readmissions in patients with common comorbidities: retrospective cohort study. *BMJ* [Internet]. 2013[cited 2014 Jun 20];347:f17171. Available from: <http://www.bmj.com/content/347/bmj.f17171>
- Araújo DV, Tavares LR, Veríssimo R, Ferraz MB, Mesquita ET. Cost of heart failure in the Unified Health System. *Arq Bras Cardiol* [Internet]. 2005[cited 2014 Jun 20];84(5):422-7. Available from: http://www.scielo.br/pdf/abc/v84n5/en_a13v84n5.pdf
- Arcand J, Ivanov J, Sasson A, Floras V, Al-Hesayen A, Azevedo ER, et al. High-sodium diet is associated with acute decompensated heart failure in ambulatory heart failure patients: a prospective follow-up study. *Am J Clin Nutr* [Internet]. 2011[cited 2014 Jun 20];93(2):332-7. Available from: <http://ajcn.nutrition.org/content/93/2/332.long>
- Annema C, Luttik M L, Jaarsma T. Reasons for readmission in heart failure: perspectives of patients, caregivers, cardiologists, and heart failure nurses. *Heart Lung* [Internet]. 2009[cited 2014 Jun 20];38(5):427-34. Available from: <http://www.heartandlung.org/article/S0147-9563%2808%2900235-5/abstract>
- Suwanno J, Petpichetchian W, Riegel B, Issaramalai SA. A model predicting health status of patients with heart failure. *J Cardiovasc Nurs* [Internet]. 2009[cited 2014 Jun 20];24(2):118-26. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/19242277>
- Dickson PP, Buck H, Riegel B. A qualitative meta-analysis of heart failure self-care practices among individuals with multiple comorbid conditions. *J Card Fail* [Internet]. 2011[cited 2014 Jun 20];17(5):413-9. Available from: <http://www.onlinejcf.com/article/S1071-9164%2810%2901231-5/abstract>
- Rabelo RE, Mantovani VM, Aliti GB, Domingues FB. Cross-cultural adaptation and validation of a disease knowledge and self-care questionnaire for a Brazilian sample of heart failure patients. *Rev Latino-Am Enfermagem* [Internet]. 2011[cited 2014 Jun 20];19(2):277-84. Available from: <http://www.scielo.br/pdf/rlae/v19n2/08.pdf>
- Ávila CW, Riegel B, Pokorski SC, Camey S, Silveira LCJ, Rabelo-Silva ER. Cross-cultural adaptation and psychometric testing of the Brazilian version of the self care of heart failure index version 6.2. *Nurs Res Pract* [Internet]. 2013[cited 2014 Jun 20];1-6. Available from: <http://www.hindawi.com/journals/nrp/2013/178976/>
- Rockwell JM, Riegel B. Predictors of self-care in persons with heart failure. *Heart Lung* [Internet]. 2001[cited 2014 Jun 20];30(1):18-25. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/11174364>
- Trojahn MM, Ruschel KB, Souza EN, Mussi CM, Hirakata V, Lopes ANM, et al. Predictors of better self-care in patients with heart failure after six months of follow-up home visits. *Nurs Res Pract* [Internet]. 2013[cited 2014 Jun 20];1:1-5. Available from: <http://www.hindawi.com/journals/nrp/2013/254352/>
- Thomas JR, Clark AM. Women with heart failure are at high psychosocial risk: a systematic review of how sex and gender influence heart failure self-care. *Cardiol Res Pract* [Internet]. 2011[cited 2014 Jun 20];1-6. Available from: <http://www.hindawi.com/journals/crp/2011/918973/>
- Falk H, Ekman I, Andreson R, Fu M, Granger B. Older patients' experiences of heart failure an integrative literature review. *J Nurs Scholar* [Internet]. 2013[cited 2014 Jun 20];45(3):247-55. Available from: <http://onlinelibrary.wiley.com/doi/10.1111/jnu.12025/abstract;jsessionid=FD423F8DC517C75E2318D3B0A02A8F84.f02t02>
- Lee CS, Tkacs NC, Riegel B. The influence of heart failure self-care on health outcomes: hypothetical cardioprotective mechanisms. *J Cardiovasc Nurs* [Internet]. 2009[cited 2014 Jun 20];24(3):179-89. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2881684/pdf/nihms202823.pdf>

ERRATUM

Article "Association between self-care and hospital readmissions of patients with heart failure", with number of DOI: 10.1590/0034-7167.2016690312i, published in the journal *Revista Brasileira de Enfermagem*, v69(3):469-74, page 469 that read:

"Amanda Chhalup Linn^I, Karina Azollin^{II,III}, Emiliane Nogueira de Souza^{II,IV}".

Read:

"Amanda Chhalup Linn^I, Karina Azzolin^{II,III}, Emiliane Nogueira de Souza^{II,IV}".

Rev Bras Enferm [Internet]. 2016 mai-jun;69(3):469-74.