Original Article

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# SELF-CARE BEHAVIOR AMONG PATIENTS WITH HEART FAILURE: RELATIONSHIP BETWEEN SOCIODEMOGRAPHIC AND CLINICAL VARIABLES

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## ABSTRACT

**Objective:** to assess self-care behavior and its relationship with the sociodemographic and clinical variables of patients with heart failure.
**Method:** a cross-sectional and correlational study was conducted in a cardiomyopathy outpatient clinic in São Paulo, SP, Brazil. Data were collected between 2018 and 2020. The sample consisted of patients with heart failure without visual, auditory, or cognitive deficits. Self-care behavior was assessed using the European Heart Failure Self-care Behavior Scale. Sociodemographic and clinical variables were selected through a literature review. The Spearman's correlation coefficient and the Mann-Whitney test were used for data analysis. Factors presenting $p \leq 0.10$ and the variables of clinical interest were included in the multiple analysis, and p-values $\leq 0.05$ were considered significant.
**Results:** 340 patients with a mean self-care score of 24.7 were analyzed. Those taking more medications and adhering to the pharmacological treatment tended to present improved self-care ($p \leq 0.001$). In contrast, patients without a partner ($p=0.022$), with a sedentary lifestyle ($p<0.001$), or employed ($p<0.001$) tended to present worse self-care scores.
**Conclusion:** The factors related to self-care behavior were adherence to pharmacological treatment, the number of medications taken, marital status, employment, and sedentary lifestyle.

**DESCRIPTORS:** Heart Failure. Behavior. Self-Care. Nursing. Cardiology.

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## COMPORTAMENTO DE AUTOCUIDADO DE PACIENTES COM INSUFICIÊNCIA CARDÍACA: RELAÇÃO COM VARIÁVEIS SOCIODEMOGRÁFICAS E CLÍNICAS


### RESUMO

**Objetivo:** avaliar o comportamento de autocuidado e sua relação com as variáveis sociodemográficas e clínicas de pacientes com insuficiência cardíaca.
**Método:** estudo transversal e correlacional realizado em um ambulatório de miocardiopatia da cidade de São Paulo. O período da coleta de dados ocorreu entre os anos de 2018 a 2020. A amostra foi constituída por pacientes com insuficiência cardíaca que não apresentavam déficit visual, auditivo e/ou cognitivo. O comportamento de autocuidado foi avaliado pela *European Heart Failure Self-care Behavior Scale*. As variáveis sociodemográficas e clínicas foram selecionadas por meio de uma revisão de literatura. Para análise dos dados, utilizou-se o coeficiente de correlação de *Spearman* e o teste de *Mann-Whitney*. Fatores que apresentaram valores de p≤0,10 e as variáveis de interesse clínico foram incluídos na análise múltipla, e considerados significativos os valores de p≤0,05.
**Resultados:** analisou-se 340 pacientes que tiveram escore médio de autocuidado de 24,7 pontos. Observou-se que pacientes que tomam mais medicamentos e aderem ao tratamento farmacológico têm tendência ao melhor autocuidado (p≤0,001), e pacientes sem companheiro (p=0,022), sedentários (p<0,001) e com vínculo empregatício ativo (p<0,001) tendem a ter piores escores de comportamento de autocuidado.
**Conclusão:** os fatores relacionados ao comportamento de autocuidado foram a adesão ao tratamento farmacológico, o número de tomadas de medicamentos, o estado civil, o vínculo empregatício e o sedentarismo.



**DESCRITORES:** Insuficiência cardíaca. Comportamento. Autocuidado. Enfermagem. Cardiologia.


## COMPORTAMIENTO DE AUTOCUIDADO DE PACIENTES CON INSUFICIENCIA CARDÍACA: RELACIÓN CON VARIABLES SOCIODEMOGRÁFICAS Y CLÍNICAS


### RESUMEN

**Objetivo:** evaluar el comportamiento de autocuidado y su relación con las variables sociodemográficas y clínicas de pacientes con insuficiencia cardíaca.
**Método:** estudio transversal y correlacional realizado en un ambulatorio de mi cardiopatía de la ciudad de Sao Paulo. El período de recogida de datos se realizó entre los años de 2018 a 2020. La muestra estuvo constituida por pacientes con insuficiencia cardíaca que no presentaban déficit visual, auditivo y/o cognitivo. El comportamiento de autocuidado fue evaluado por la *European Heart Failure Self-care Behavior Scale*. Las variables sociodemográficas y clínicas fueron seleccionadas por medio de una revisión de literatura. Para el análisis de los datos se utilizó el coeficiente de correlación de *Spearman* y el test de *Mann-Whitney*. Los factores que presentaron valores de p≤0,10 y las variables de interés clínico fueron incluidos en el análisis múltiple, y considerados significativos los valores de p≤0,05.
**Resultados:** se analizaron 340 pacientes que obtuvieron un puntaje medio de autocuidado de 24,7 puntos. Se observó que pacientes que toman más medicamentos y adhieren al tratamiento farmacológico tienen tendencia a obtener un mejor autocuidado (p≤0,001); por otro lado, los pacientes sin compañero (p=0,022), sedentarios (p<0,001) y con vínculo de trabajo activo (p<0,001) tienden a tener peores puntajes de comportamiento de autocuidado.
**Conclusión:** los factores relacionados al comportamiento de autocuidado fueron la adherencia al tratamiento farmacológico, el número de tomadas de medicamentos, el estado civil, el vínculo de empleo y el sedentarismo.



**DESCRIPTORES:** Insuficiencia cardíaca. Comportamiento. Autocuidado. Enfermería. Cardiología.

## INTRODUCTION

Heart failure (HF) has increased in recent years due to several factors, such as changes in the population's demographic profile, epidemiological characteristics, and advancements in health treatments[1]. HF cases are expected to increase 46% over the next 15 years in the United States of America[2]. It is one of Brazil's leading causes of mortality, being accountable for a high number of hospitalizations;161,647 hospitalizations and 21,751 deaths were recorded in 2021[3]. In Europe, five in every 1,000 adults have HF, and the number of HF-related hospitalizations is expected to be approximately 50% in the next 25 years[4]. Hospital costs are high due to the disease's high morbidity rates. In Brazil, HF-related costs averaged R$37.1 billion between 2010 and 2015, 0.7% of the gross domestic product (GDP), burdening the Unified Health System (SUS)[5].

Achieving the planned goals of HF treatment requires individuals to have adequate self-care behavior and adhere to pharmacological and non-pharmacological recommendations[6]. According to Orem's theory, self-care concerns human beings' regulatory function, i.e., people choose to perform self-care actions or have the help of caregivers to provide and maintain the conditions to maintain life, physical, and psychological functioning and develop essential aspects for life[7].

Nonetheless, self-care may be affected by clinical, physical, and psychological changes and social situations[8–9]. For example, a study conducted in Fortaleza, Brazil, with 57 patients to investigate the influence of sociodemographic characteristics on the self-care of people with HF showed that patients with partners present improved self-care practices[10].

In contrast, a lack of knowledge about the disease and its treatment contributes to individuals' self-care deficit. A study showed that inadequate self-care was related to the patient being unable to identify the signs and symptoms of HF decompensation and lacking confidence to manage self-care[8].

A cross-sectional study conducted in Nepal with 221 patients with HF showed that patients with higher educational levels presented improved self-care maintenance and management. Additionally, those living by themselves and with a better functional class had greater confidence in self-care, and patients with greater social support also presented improved self-care[9].

However, studies analyzing the variables influencing self-care behavior in the Brazilian population are still incipient. Furthermore, researchers highlight that due to heterogeneous populations, continuous epidemiological studies are essential for new discoveries[11].

In this sense and considering that self-care behavior can positively impact an individual's health and quality of life, studies identifying associated sociodemographic and clinical characteristics are crucial for nurses to adapt disease maintenance and management strategies in multidisciplinary programs.

Given the previous discussion, the following research question emerged: what is the relationship between sociodemographic and clinical variables with the self-care behavior of patients with HF?

Thus, this study aimed to assess self-care behavior and its relationship with the sociodemographic and clinical variables of patients with heart failure.

## METHOD

This cross-sectional and correlational study was performed in the cardiomyopathy outpatient clinic of a tertiary hospital in São Paulo, SP, Brazil. This outpatient clinic cares for patients with valvular abnormalities, post-acute myocardial infarction (AMI), HF, and congenital heart abnormalities. Approximately 250 patients are assisted monthly, and the absenteeism rate is 10% to 20%.

Sample size calculation was based on the data collection of a pilot study with 21 patients, considering that the disease duration is one of the most critical factors interfering with the self-care behavior of individuals with HF. The sample size was calculated using Spearman's correlation coefficient; a correlation coefficient of – 0.251 was considered, with a significance level of 5% and test power of 80%; a minimum sample of 297 participants was obtained. Due to potential withdrawals, the sample size was increased by 10% (n=327 patients).

Inclusion criteria were patients with diastolic and/or systolic HF and over 18 years of age. Patients with visual, hearing, or cognitive impairment diagnosed by a medical team and reported in the medical record were not included.

Self-care behavior was assessed using the Brazilian Version of the European Heart Failure Self-Care Behavior Scale (EHFScBs). This scale was based on Orem's Self-Care theory, comprising 12 questions addressing self-care behavior. The responses to the items range from 1, "I completely agree," to 5, "I completely disagree." The total score is obtained by summing up all responses, ranging from 12 to 60 points; lower scores indicate improved self-care. The adaptation of the instrument for the Brazilian context followed the stages of translation, synthesis, back-translation, a review by an Expert Committee, and a pre-test. The instrument's reliability was assessed by Cronbach's alpha (internal consistency) and reproducibility through the pre- and post-test. Cronbach's alpha ranged from 0.61 to 0.70[12].

Sociodemographic and clinical variables were identified in the literature and categorized as age (complete years), race (Caucasian, mixed race, Afro-descendant), sex (male or female), religion (Catholic, evangelical, other religions, or no religion), education (years of schooling), marital status (married/stable union or without a partner), family income (less than one times the minimum wage, one to three times the minimum wage, more than five times the minimum wage, or did not know). The minimum wage considered here was in force in 2017, R$937.00[13]. Individual income was less than one times the minimum wage, one to three times the minimum wage, more than three to five times the minimum wage, and not working), number of people depending on family income (number of people), occupation (employed, homemaker, or not working), HF etiology (classified according to information contained in the medical record), HF classification (functional class I, II, III or IV)[5], stage of the disease (stage A, B, C or D)[14], disease duration (complete years), medications taken at home (name, dose, time, and class), and personal history (medical diagnosis of systemic arterial hypertension, physical inactivity, hypercholesterolemia, diabetes mellitus, acute coronary syndrome, arrhythmia, chronic renal failure, peripheral vascular disease, stroke, depression, hypertriglyceridemia, asthma, bronchitis, smoking, pulmonary emphysema, acquired immunodeficiency syndrome, and alcohol consumption).

Those who smoked daily or quit less than six months ago were considered smokers, and those who quit smoking more than six months ago were considered ex-smokers[15]. Patients who reported smoking were asked about the number of packs they smoked and for how many years. The World Health Organization (WHO) recommendations concerning a sedentary lifestyle were followed, i.e., physical activity is defined as 150 minutes of moderate physical activity or 75 minutes of vigorous physical activity per week[16]. The intensity of physical activity was based on the Compendium of Physical Activity (CAF)[17]. Patients reporting alcohol consumption were asked about the type of drink, dose, frequency, and since when they consumed it.

The quantitative variables were described according to mean, standard deviation, and quartiles, while the qualitative variables were described using percentage and absolute frequencies. The Mann-Whitney test (dichotomous independent variables) and the Krukal-Wallis test (variables with more than

two categories) were used to verify differences in the means and distribution between the self-care scores and the categorical independent variables. The Spearman's correlation coefficient was used to verify the correlation of the scores with quantitative independent variables.

A multiple linear regression model was adopted to assess the joint association of different independent variables and the self-care score. The linear regression residuals did not present a normal distribution by constructing an envelope graph. Therefore, alternative regression methods were assessed, such as transforming the dependent variable or considering other probability distributions (such as Inverse normal-gamma distribution). The logarithmic transformation for the response variable showed the best results. All analyses were carried out using the R statistical software, version 4.0, and those with a $p<0.05$ were considered statistically significant. The Institutional Review Board approved the study project.

## RESULTS

Data were collected from 340 patients. Table 1 shows the participants' sociodemographic and clinical characterization.

**Table 1 –** Independent variables' absolute frequencies and percentages. São Paulo, SP, Brazil, 2020-2021 (n=340).

| Variables | Mean±SD | Median (Q25/Q75) |
|---|---|---|
| Age | 58.1±12.9 | 60 (50/68) |
| Education | 7.6±4.4 | 8.0 (4/11) |
| Number of people depending on family income | 2.8±1.4 | 2.5 (2/4) |
| | | **n (%)** |
| Race | | |
| Caucasian | | 147 (43.2) |
| Afro-descendent | | 44 (12.9) |
| Mixed race | | 149 (43.8) |
| Sex | | |
| Female | | 164 (48.2) |
| Male | | 176 (51.8) |
| Religion | | |
| Agnostic/Atheist/No religion | | 18 (5.3) |
| Catholic | | 199 (58.5) |
| Evangelical | | 104 (30.6) |
| Other religions (Buddhism, Spiritism, or African religion) | | 19 (5.6) |
| Marital Status | | |
| Married/ stable union | | 193 (56.8) |
| Divorced | | 27 (7.9) |
| Single | | 76 (22.4) |
| Widowed | | 44 (12.9) |

**Table 1 –** Cont.

| Variables | Mean±SD | Median (Q25/Q75) |
|---|---|---|
| Family income | | |
| Less than 1 times the minimum wage | | 12 (3.5) |
| 1 to 3 times the minimum wage | | 257 (75.6) |
| More than 3 up to 5 times the minimum wage | | 40 (11.8) |
| More than 5 times the minimum wage | | 30 (8.8) |
| Did not know | | 1 (0.3) |
| Individual income | | |
| Less than 1 times the minimum wage | | 40 (11.8) |
| 1 to 3 times the minimum wage | | 251 (73.8) |
| More than 3 up to 5 times the minimum wage | | 15 (4.4) |
| More than 5 times the minimum wage | | 12 (3.5) |
| Not working (unemployed or homemaker) | | 22 (6.5) |
| Occupation | | |
| Employed | | 99 (29.1) |
| Homemaker | | 26 (7.6) |
| Not working | | 215 (63.2) |
| Personal history | | |
| Systemic arterial hypertension | | 245 (72.1) |
| Diabetes mellitus | | 113 (33.2) |
| Stroke | | 63 (18.5) |
| Peripheral vascular disease | | 83 (24.4) |
| Hypercholesterolemia | | 143 (42.1) |
| Hypertriglyceridemia | | 20 (5.9) |
| Acquired immunodeficiency syndrome | | 1 (0.3) |
| Chronic renal failure | | 89 (26.2) |
| Emphysema | | 8 (2.4) |
| Asthma | | 17 (5.0) |
| Bronchitis | | 13 (3.8) |
| Depression | | 31 (9.1) |
| Arrhythmia | | 92 (27.1) |
| Acute coronary syndrome | | 106 (31.2) |
| Smoking | | 13 (3.8) |
| Physical inactivity | | 206 (60.6) |
| Alcohol consumption | | 17 (5.0) |

The mean self-care behavior score was 24.7+7.8, ranging from 12 to 48 points.

The univariate analysis of the relationship between self-care behavior and sociodemographic and clinical variables showed a weak and negative correlation with the number of medications taken, i.e., the greater the number of medications taken, the better the self-care. However, patients without

a partner, employed or homemakers, or physically inactive individuals tended to present worse self-care behavior scores (Tables 2 and 3).

**Table 2** – Spearman's correlation coefficient between the European Heart Failure Self-Care Behavior Scale scores and quantitative independent variables. São Paulo, SP, Brazil, 2020-2021 (n=340).

| | Correlation coefficient with self-care behavior scale scores | 95%CI | | p-value |
|---|---|---|---|---|
| Age | -0.07 | -0.19 | 0.04 | 0.24 |
| Education | 0.05 | -0.07 | 0.15 | 0.57 |
| Number of people depending on family income | 0.01 | -0.1 | 0.12 | 0.80 |
| Duration of the disease | -0.04 | -0.16 | 0.07 | 0.47 |
| Number of times medications are taken | -0.17 | -0.29 | -0.08 | <0.001 |
| Number of medications | -0.09 | -0.22 | 0.01 | 0.09 |

**Table 3** – Relationship between self-care behavior and qualitative independent variables. São Paulo, SP, Brazil, 2020-2021 (n=340).

| Independent variables | Mean | Standard deviation | Median | First quartile | Third quartile | n | p-value |
|---|---|---|---|---|---|---|---|
| Race | | | | | | | |
| Caucasian | 25.37 | 7.49 | 24 | 20 | 30 | 147 | 0.241† |
| Afro-descendant | 24.23 | 7.6 | 24 | 18 | 30 | 44 | |
| Mixed race | 24.13 | 8.14 | 23 | 18 | 28 | 149 | |
| Sex | | | | | | | |
| Female | 24.65 | 7.9 | 23.5 | 19 | 30 | 164 | 0.919* |
| Male | 24.7 | 7.73 | 23 | 19.75 | 28 | 176 | |
| Religion | | | | | | | |
| Catholic | 24.13 | 7.47 | 23 | 19 | 28 | 199 | 0.271† |
| Evangelical | 25.09 | 8.14 | 22.5 | 19 | 30 | 104 | |
| Others | 25.16 | 7.3 | 24 | 21.5 | 29 | 19 | |
| No religion | 27.94 | 9.43 | 28 | 22.25 | 32.25 | 18 | |
| Marital Status | | | | | | | |
| Married/stable union | 23.77 | 7.45 | 23 | 18 | 27 | 193 | 0.022* |
| No partner | 25.88 | 8.1 | 24 | 20 | 31 | 147 | |
| Family Income | | | | | | | |
| Less than 1 times the MW | 24.17 | 6.04 | 24 | 20.5 | 30 | 12 | 0.975† |
| From 1 to 3 times the MW | 24.54 | 7.84 | 23 | 19 | 28 | 257 | |
| More than 3 to 5 1 to 3 times the MW | 25.75 | 8.21 | 24 | 20 | 31 | 40 | |
| More than 5 times the MW | 24.73 | 7.91 | 23.5 | 19 | 29.5 | 30 | |
| Did not know | 23 | | 23 | 23 | 23 | 1 | |

**Table 3** – Cont.

| Independent variables | Mean | Standard deviation | Median | First quartile | Third quartile | n | p-value |
|---|---|---|---|---|---|---|---|
| Individual income | | | | | | | |
| Less than 1 times the MW | 24.58 | 8.4 | 23 | 19 | 30 | 40 | 0.591† |
| From 1 to 3 times the MW | 24.41 | 7.68 | 23 | 19 | 28 | 251 | |
| More than 3 to 5 1 to 3 times the MW | 27.53 | 8.63 | 25 | 21 | 31.5 | 15 | |
| More than 5 times the MW | 25.83 | 8.31 | 23.5 | 19 | 32 | 12 | |
| Not working (unemployed/ homemaker) | 25.41 | 7.46 | 25.5 | 20.75 | 28 | 22 | |
| Occupation | | | | | | | |
| Employed | 27.05 | 7.67 | 26 | 21 | 32 | 99 | <0.001† |
| Homemaker | 27.42 | 7.3 | 26 | 23 | 31 | 26 | employed ≠not working |
| Not working | 23.26 | 7.59 | 22 | 18 | 26 | 215 | Homemaker ≠not working |
| Systemic arterial hypertension | | | | | | | |
| No | 24.83 | 9.09 | 23 | 18 | 29 | 95 | 0.650* |
| Yes | 24.62 | 7.26 | 24 | 20 | 29 | 245 | |
| *Diabetes mellitus* | | | | | | | |
| No | 25.12 | 7.96 | 24 | 19 | 30 | 227 | 0.179* |
| Yes | 23.8 | 7.43 | 23 | 19 | 26 | 113 | |
| Stroke | | | | | | | |
| No | 25 | 8.06 | 24 | 19 | 30 | 277 | 0.152* |
| Yes | 23.25 | 6.42 | 22 | 18.5 | 26.5 | 63 | |
| Peripheral vascular disease | | | | | | | |
| No | 24.71 | 7.86 | 23 | 19 | 28 | 257 | 0.898* |
| Yes | 24.58 | 7.65 | 23 | 19 | 30 | 83 | |
| Hypercholesterolemia | | | | | | | |
| No | 24.97 | 8.21 | 23 | 19 | 30 | 197 | 0.756* |
| Yes | 24.28 | 7.2 | 23 | 19.5 | 27 | 143 | |
| Hypertriglyceridemia | | | | | | | |
| No | 24.73 | 7.89 | 23 | 19 | 30 | 320 | 0.757* |
| Yes | 23.85 | 6.23 | 23 | 19.5 | 26.5 | 20 | |
| Acquired immunodeficiency syndrome | | | | | | | |
| No | 24.7 | 7.8 | 23 | 19 | 29 | 339 | - |
| Yes | 19 | | 19 | 19 | 19 | 1 | |
| Chronic renal failure | | | | | | | |
| No | 25.02 | 8.03 | 24 | 19.5 | 30 | 251 | 0.222* |
| Yes | 23.71 | 7.06 | 23 | 19 | 26 | 89 | |
| Emphysema | | | | | | | |
| No | 24.72 | 7.85 | 24 | 19 | 29.25 | 332 | 0.560* |
| Yes | 23 | 5.63 | 22 | 21 | 23 | 8 | |

**Table 3** – Cont.

| Independent variables | Mean | Standard deviation | Median | First quartile | Third quartile | n | p-value |
|---|---|---|---|---|---|---|---|
| Asthma | | | | | | | |
| No | 24.71 | 7.81 | 23 | 19 | 29 | 323 | 0.704* |
| Yes | 24.06 | 7.87 | 21 | 18 | 28 | 17 | |
| Bronchitis | | | | | | | |
| No | 24.69 | 7.8 | 23 | 19 | 28.5 | 327 | 0.826* |
| Yes | 24.54 | 8.19 | 22 | 18 | 30 | 13 | |
| Depression | | | | | | | |
| No | 24.64 | 7.69 | 23 | 19 | 29 | 309 | 0.898* |
| Yes | 25.1 | 8.92 | 24 | 19.5 | 28.5 | 31 | |
| Arrhythmia | | | | | | | |
| No | 24.45 | 7.71 | 23 | 19 | 28 | 248 | 0.420* |
| Yes | 25.3 | 8.05 | 23.5 | 20 | 30 | 92 | |
| Acute coronary syndrome | | | | | | | |
| No | 25.08 | 8.19 | 24 | 19 | 29.75 | 234 | 0.267* |
| Yes | 23.8 | 6.81 | 22 | 19 | 28 | 106 | |
| Smoking | | | | | | | |
| No | 24.57 | 7.86 | 23 | 19 | 29 | 327 | 0.064* |
| Yes | 27.38 | 5.74 | 28 | 24 | 28 | 13 | |
| Physical inactivity | | | | | | | |
| No | 21.6 | 7.58 | 20 | 16 | 25 | 134 | <0.001* |
| Yes | 26.68 | 7.29 | 25 | 21 | 31 | 206 | |
| Alcohol consumption | | | | | | | |
| No | 24.57 | 7.76 | 23 | 19 | 28 | 323 | 0.302† |
| Yes | 26.76 | 8.57 | 25 | 20 | 31 | 17 | |
| Functional Class | | | | | | | |
| I | 25.06 | 8.97 | 22 | 19 | 31 | 77 | 0.480† |
| II | 24.46 | 7.4 | 24 | 19 | 28 | 256 | |
| III | 28.43 | 8.38 | 30 | 21.5 | 34 | 7 | |
| Stages of Heart Failure | | | | | | | |
| A | 25.24 | 9.05 | 22.5 | 19 | 32.5 | 78 | 0.747† |
| B | 24.43 | 7.36 | 24 | 19 | 28 | 254 | |
| C | 27.12 | 8.59 | 26 | 20.25 | 32.5 | 8 | |

Legend: *Mann Whitney test; †Kruskal-Wallis test.

Table 4 presents the results of the regression model with logarithmic transformation, showing that non-adherent patients present a self-care score 1.223 times higher than the score of adherent patients, i.e., on average, non-adherent patients present self-care scores 22.3% higher than that of adherent patients. Additionally, an increase of one unit in the number of medicines taken leads to a decrease of 0.9% in the self-care score; on average, patients without a partner have a self-care score 8% higher than patients with a partner; employed patients present scores 11.7% higher than non-working patients and homemakers present scores 20.5% higher than non-working patients. Finally, on average, physically inactive patients present self-care behavior scores 23.8% higher than physically active patients.

**Table 4** – Multiple regression model's results considering the logarithmic transformation for the self-care behavior score. São Paulo, SP, Brazil, SP, 2020-2021 (n=340).

| | Exponential (Coefficient) | CI* (95%) | | p-value |
|---|---|---|---|---|
| Intercept | 20.041 | 16.724 | 24.015 | < 0.001 |
| Adherence: non-adherent (MAT†<5) | 1.223 | 1.106 | 1.352 | < 0.001 |
| Number of times medications are taken | 0.991 | 0.982 | 1.000 | 0.039 |
| Marital status: no partner | 1.080 | 1.017 | 1.146 | 0.012 |
| Occupation: employed | 1.117 | 1.043 | 1.198 | 0.002 |
| Occupation: homemaker | 1.205 | 1.075 | 1.351 | 0.001 |
| Physically inactive: yes | 1.238 | 1.165 | 1.317 | < 0.001 |
| Smoking: yes | 1.022 | 0.876 | 1.193 | 0.778 |
| Age | 1.000 | 0.997 | 1.002 | 0.884 |
| Education | 1.004 | 0.997 | 1.011 | 0.281 |
| Duration of the disease (years) | 1.000 | 0.997 | 1.002 | 0.734 |

Legend: *CI=Confidence interval; †MAT: Treatment adherence measure

## DISCUSSION

This study's sociodemographic results are similar to those reported by other studies[18–20]. One study showed that, on average, patients with HF are between 51 and 66 years old[18–19]. A study conducted in São Paulo, Brazil, with 100 patients with HF aiming to identify barriers to non-adherence shows that most participants had a family income of up to three times the minimum wage[20].

Regarding comorbidities, the most prevalent was systemic arterial hypertension, one of the most frequent causes of the development of HF[4]. The high number of comorbidities associated with these patients may be related to the increased survival of this population and the fact that HF is the final pathway for other cardiovascular diseases[20].

The participants' mean self-care score was 24. A similar result was found in a study conducted in Ethiopia, which shows that more than half of the participants presented good self-care behavior[21].

Analysis of the relationship between self-care behavior and sociodemographic and clinical variables revealed that non-adherent patients presented a self-care score higher than that of adherent patients. Additionally, the increase in the number of times medications are taken leads to a decrease in the self-care score; employed patients, those without a partner, or physically inactive present higher self-care scores. Similar results are reported in the literature. For example, a study conducted in Silesia, with 180 patients with HF, showed that more than 65% of patients who followed recommendations regarding medication use presented a good level of self-care[22]. A multicenter study analyzing 295 patients with HF reports that better self-care behaviors were related to patients taking more than five medications[23]. However, there is no consensus in the literature regarding such an association, and studies' results are controversial; some studies indicate that polypharmacy increases the likelihood of non-adherence to treatment recommendations[19].

Regarding marital status, data from another study corroborated our findings, which showed that living alone was associated with worse self-care behavior scores[6]. Because family support is an essential factor in these patients' self-care[24], families and caregivers must be included in the guidance provided by nurses regarding how to prepare low-sodium meals, monitor the signs and symptoms of the worsening of the disease, and develop strategies to ensure adherence to the pharmacological treatment[25].

According to the Brazilian Version of the European Heart Failure Self-Care Behavior Scale, the sedentary patients addressed here presented worse self-care behavior scores. A study assessing the impact of an exercise program on the self-care behavior of 69 people with heart failure showed a significant improvement in self-care control[26]. A controlled multicenter clinical trial conducted in Australia, with 132 individuals with HF, reported that the intervention group participating in a six-minute walk test-based program presented improved self-care behavior (p=0.031) and physical activity levels (p=0.034)[27]. The European HF guideline emphasizes the importance of physical exercise to improve this population's quality of life and functional capacity[4].

Another result is that employed patients presented worse self-care behavior scores. A study addressing 100 Arab patients with HF showed that being unemployed was one of the predictors of better confidence in self-care (72.45±21.3 versus 64.02±18.2, p=0.05)[28]. This finding may be related to the fact that employed individuals experience reduced social support, the meals they consume most of the time are not recommended, and there is no time for physical exercise. However, this association is also controversial, as results from other studies show that being unemployed worsens self-care behaviors[29].

Thus, the results show a need to implement multidisciplinary programs to improve the self-care behavior of individuals with HF. In these programs, nurses should focus on the actions aimed at those presenting poor adherence to treatment, without a partner, employed, and physically inactive. Self-care interventions decrease adverse clinical outcomes of the disease and improve the quality of life of patients with HF[25,30].

This study's limitations refer to data originating from a cross-sectional study, which prevents the establishment of causal relationships. Additionally, adherence to self-care behavior was measured at a single point in time, while self-care behaviors are subject to change over time. Additionally, this study was conducted in a single center and outpatient clinic; hence, the results cannot be generalized to patients with different characteristics and/or hospitalized patients. Future studies are suggested to investigate the impact of nursing interventions aimed at individuals with these characteristics.

## CONCLUSION

Most participants presented adequate self-care behavior. The factors associated with the best self-care scores were more medications taken and adherence to the pharmacological treatment. In contrast, the factors associated with the worst scores were patients without a partner, physically inactive, and employed individuals or homemakers.

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## NOTES

### ORIGIN OF THE ARTICLE

Article extracted from the master's thesis – Adherence to pharmacological treatment and self-care behavior of patients with heart failure, defended in the Graduate Program in Nursing, Universidade Federal de São Paulo, in 2022.

### CONTRIBUTION OF AUTHORITY

Study design: Lima JG, Barros ALBL, Lopes JL.
Data collection: Lima JG.
Data analysis and interpretation: Lima JG, Lopes JL.
Discussion of results: Lima JG, Lopes JL.
Redaction and/or critical review of content: Barros ALBL, Lopes JL.
Review and final approval of the final version: Lopes JL.

### APPROVAL OF ETHICS COMMITTEE IN RESEARCH

Approved by the Ethics Committee in Research Universidade Federal de São Paulo –São Paulo Hospital, opinion No. 2.555.873/2018, Certificate of Presentation for Ethical Assessment 82703318.1.0000.5505.

### CONFLICT OF INTEREST

There is no conflict of interest.

### EDITORS



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