

# Anxiety, depression and cardiac anxiety in patients with implantable cardioverter-defibrillator according to gender and age

Ansiedade, depressão e ansiedade cardíaca em pacientes com cardiodesfibrilador implantável segundo gênero e idade

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## ABSTRACT

**Objective:** to investigate the relationship between gender and age with symptoms of anxiety, depression and cardiac anxiety in patients with implantable cardioverter-defibrillator. **Methods:** cross-sectional study, with 76 patients with device attended in a university hospital. For data collection, a sociodemographic/clinical form and two validated scales were used in Brazil. In the analysis, the chi-square tests, exact Fischer and Mann-Whitney, with a significance level of 5% were adopted. **Results:** it was observed that the groups were homogeneous in terms of gender and age. Women presented higher medians in both anxiety and depression symptoms, with statistical significance. They also presented higher medians in symptoms of cardiac anxiety, but without statistical significance. Regarding age, no significant differences were found for the symptoms investigated. **Conclusion:** women presented more symptoms of anxiety and depression; however there was no relationship between the age of the patients and their symptoms.

**Descriptors:** Anxiety; Depression; Arrhythmias, Cardiac; Defibrillators, Implantable; Perioperative Nursing.

## RESUMO

**Objetivo:** investigar a relação entre gênero e idade com sintomas de ansiedade, depressão e ansiedade cardíaca em pacientes com cardiodesfibrilador implantável. **Métodos:** estudo transversal, com 76 pacientes com dispositivo atendidos em um hospital universitário. Para a coleta de dados, utilizaram-se formulário sociodemográfico/clínico e duas escalas validadas no Brasil. Na análise, adotaram-se os testes qui-quadrado, exato de Fischer e Mann-Whitney, com nível de significância de 5%. **Resultados:** observou-se que os grupos foram homogêneos entre si quanto ao gênero e à idade. As mulheres apresentaram medianas maiores, tanto nos sintomas de ansiedade quanto nos de depressão, com significância estatística. Apresentaram medianas maiores também nos sintomas de ansiedade cardíaca, porém sem significância estatística. Com relação à idade, não foram encontradas diferenças significativas para os sintomas investigados. **Conclusão:** as mulheres apresentaram mais sintomas de ansiedade e depressão, todavia não houve relação entre a idade dos pacientes com os respectivos sintomas.

**Descritores:** Ansiedade; Depressão; Arritmias Cardíacas; Desfibriladores Implantáveis; Enfermagem Perioperatória.

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## Introduction

In the last decades, especially in the last five years in Brazil, cardiac arrhythmias have been responsible for more than 150,000 hospitalizations, 82,295 of which were in the Southeast region in the same period<sup>(1)</sup>. It is estimated that more than 20 million people have some type of cardiac arrhythmia, being responsible for more than 320 thousand sudden deaths every year in the country, according to data from the Brazilian Society of Cardiac Arrhythmias<sup>(2)</sup>.

Among the many types of arrhythmias, there are tachyarrhythmias whose treatment may consist of implantable cardioverter-defibrillator implantation, when severe arrhythmic conditions are detected. When they occur with very accelerated rhythms, they can cause hemodynamic compromise, leading to dizziness or syncope, caused by decreased cardiac output and, depending on the type of tachyarrhythmia, may be fatal<sup>(3)</sup>.

Thus, the main indication for implantable cardioverter-defibrillator implantation is the prevention of sudden cardiac death, due to ventricular tachycardia and/or ventricular fibrillation. The implantation of the device is indicated as primary prevention for individuals at high risk of sudden cardiac death, even if they have not experienced an episode of cardiac arrest, and as secondary prevention for individuals who have already had some potentially fatal arrhythmic episode or have recovered from cardiac arrest due to ventricular fibrillation or pulseless ventricular tachycardia<sup>(2)</sup>.

If on the one hand the patients waiting for the implantable cardioverter-defibrillator implant experience the symptoms of tachyarrhythmia and the fear of sudden death, on the other hand, after the implant, these individuals start to live with the continuous concern of eventual device failure, feelings of anxiety about the battery duration, fear of performing routine domestic activities, concerns such as loss of job, change in sexual activity, loss of social, family and professional status, besides reporting the perception of alte-

rations in self-image and feeling of early deterioration of the body<sup>(4)</sup>.

Despite the numerous clinical benefits already proven, there is evidence that the implantable cardioverter-defibrillator can generate negative feelings in people who depend on it. The device can generate discomfort and pain at the implant site, especially in the first months after its installation; it can interfere with the quality of sleep and sexuality, it can alter the socialization and performance of physical exercises, besides the aspects of dependence on the device, such as concern about battery life, malfunctioning and the expectation of inappropriate shock<sup>(4-6)</sup>.

Evidence of the association of this gender with symptoms of anxiety and depression in patients with heart disease undergoing surgical treatment is already available in the literature, but not with those using implantable cardioverter-defibrillator. As for the association of these symptoms with age, we found controversial results in surgically treated cardiac patients, but they are not studies developed with individuals with implantable cardioverter-defibrillator<sup>(7)</sup>.

Thus, the present investigation intends to answer the following study questions: do women with implantable cardioverter-defibrillator present greater symptoms of anxiety, depression and cardiac anxiety when compared to men with this device? Adults with implantable cardioverter-defibrillator present greater symptoms of anxiety, depression and cardiac anxiety when compared with elderly men with implantable cardioverter-defibrillator?

In view of the above, the objective of the study was to investigate the relationship between gender and age with symptoms of anxiety, depression and cardiac anxiety in patients with implantable cardioverter-defibrillator.

## Methods

Cross-sectional study, conducted at the arrhythmia outpatient clinic of a university hospital in the interior of the state of São Paulo, on the day of the

pre-scheduled return, through individual interviews and consultation of the participants' records, from November 2018 to August 2019. The arrhythmia outpatient clinic is open on Friday morning and attends on average ten patients per day, counting on approximately 200 patients in all.

In this study, a sample was used for convenience, so that the researchers attended the clinic, acquired a list with the names of the patients who would be seen on the day and those who met the inclusion criteria were invited to participate. It was not possible to perform a sample size calculation, because there is no available in the literature the variance of the response variables. To minimize this limitation, we tried to invite as many patients as possible during the data collection period.

The inclusion criteria were patients of both sexes, over 18 years of age, regardless of social class and race, and who had an implantable cardioverter-defibrillator. Patients with cardiac resynchronizer or pacemaker concomitant with the implantable cardioverter-defibrillator, who presented clinical decompensation of heart disease on the day of data collection (presence of dyspnea or tachycardia) and who did not present cognitive conditions to answer the questionnaires, were excluded.

For the identification of the preserved cognitive condition, six questions were used<sup>(8)</sup> What is today's date? What is your age? What day of the week are we on? What is the name of the place we are at this moment? What is your full name? What is the name of the city where you were born? Participants were excluded from the study when they made a mistake or were unable to report three or more questions.

An instrument with socio-demographic and clinical data was developed by the researchers to characterize the participants: date of interview, date of birth, date of implantable cardioverter-defibrillator implantation, gender, presence of partner, schooling in full years, professional status, family monthly income, medical diagnosis of anxiety in the medical chart,

medical diagnosis of depression in the chart, type of indication for implantable cardioverter-defibrillator implantation, basic arrhythmia, use of psychotropics at home (anxiolytic/antidepressants), past family history of coronary disease, past family history of sudden death, basic clinical diagnosis, presence of associated diseases and presence of inappropriate shock after implantation. The age was calculated by subtracting the date of the interview from the date of birth (in years), while the time of implantable cardioverter-defibrillator implantation was calculated by subtracting the date of the interview from the date of implantation of the device (in years).

The Hospital Anxiety and Depression Scale (HADS)<sup>(9)</sup>, in its version adapted to Portuguese<sup>(10)</sup>, was used for the evaluation of anxiety and depression symptoms. In all, the instrument is composed of 14 questions, seven for the evaluation of anxiety symptoms and seven for the evaluation of depression symptoms. The questions address somatic and psychological symptoms, with a four-point response scale. The values of the answers range from zero to three whose sum can vary from 0 to 21 points for each of the emotional disorders researched, and the higher the value, the greater the perception of anxiety and depression symptoms.

Cardiac anxiety is a specific type of anxiety, which was developed by Eifert, based on Cardiophobia Theory. The main differential of this specific type of anxiety is in the nature of symptoms, i.e., the individual experiences signs and symptoms of a heart attack, when it does not exist<sup>(11)</sup>.

O *Questionário de Ansiedade Cardíaca*<sup>(10)</sup>, in its version adapted to Portuguese<sup>(12)</sup>, was used for the evaluation of cardiac anxiety symptoms. The questionnaire is composed of 14 items evaluated using a five-point Likert Scale. This questionnaire has two domains: fear and hypervigilance of heart related stimuli (9 items) and avoidance of activities that may trigger the symptoms (5 items). The total score is obtained by summing the answers to the 14 items, being pos-

sible a variation of 0-56. It is also possible to obtain the scores of both domains, so the fear and hypervigilance domain may present a variation of 0-36, and the avoidance domain of 0-20, both with higher values indicating greater perception of cardiac anxiety by the patient.

The data was entered in the Statistical Package Social Science Program, version 22.0 for Windows. Descriptive analyses of simple frequency for nominal or categorical variables, of central tendency (mean and median) and dispersion (standard deviation (SD)) for continuous variables were performed. For the comparison of the patients' sociodemographic and clinical characteristics, when separated by gender, the Mann-Whitney test was performed for independent samples for the quantitative variables and the chi-square test for the categorical variables. The Fisher's Exact Test was used in the results that presented a frequency lower than five, obtained in the 2x2 Contingency Tables.

For the comparison of the medians of symptoms of cardiac anxiety, anxiety and depression, according to gender and age categorized (adult x elderly), the Mann-Whitney test was used for independent samples. The significance level was 5%.

The study was developed according to the national ethical precepts, according to the National Health Council Resolution nº 466/12, and obtained the approval of the Research Ethics Committee with the opinion no. 2,790,094/2018, and Presentation and Ethical Appreciation Certification: 92179118.0.0000.5393.

## Results

During the data collection period 83 patients were approached and invited to participate in the study, of which four refused to participate in the research and three were excluded because they had no preserved cognitive condition. Finally, the sample was composed of 76 patients who met the inclusion criteria and agreed to participate in the survey.

The socio-demographic and clinical characterization of the sample are found in Table 1.

**Table 1** – Sociodemographic and clinical characterization of participants according to gender. Ribeirão Preto, SP, Brasil, 2018-2019 (n=76)

Variables	Men (n=46)		Women (n=30)		p
	n (%)	Median	n (%)	Median	
With partner presence	26 (56.5)		13 (43.3)		0.261*
Professionally active	12 (26.1)		3 (10.0)		0.139†
Education (years)	46 (100.0)	6.0	30 (100.0)	6.0	0.578‡
Monthly Income (reais)§	41 (89.1)	2.000.0	25 (83.3)	1.998.0	0.353‡
Age (Years)	46 (100.0)	53.0	30 (100.0)	56.0	0.463‡
Implant time	46 (100.0)	3.2	30 (100.0)	4.4	0.467‡
Basic arrhythmia	46 (100.0)		30 (100.0)		
Ventricular Tachycardia†	22 (47.8)		8 (26.7)		0.114*
Ventricular Fibrillation¶	6 (13.0)		3 (10.0)		0.622†
Use of psychotropics at home	3 (6.5)		3 (10.0)		0.675†

\*Chi-square test; †Teste Fisher's exact; ‡Teste Mann-Whitney for independent samples; §Monthly income (real): 41 men and 25 women responded; ||Implantable cardioverter-defibrillator implantation time in years; ¶Tachycardia and Ventricular Fibrillation: data present in 30 male and 16 female medical records

It is observed that no significant differences were found in the variables of sociodemographic characterization between the groups. Most of the participants, from both groups, lived with a partner, did not work, had low schooling and income and did not use psychotropic drugs at home. The median age of both groups was below 60 years, configuring, with greater frequency, adult patients. No difference was found regarding the basic arrhythmia, according to the gender.

The mean age of men was 52.7 years (SD=13.5), ranging from 21.9 to 78.1, while for women, the mean age was 54.4 years (SD=14.6), ranging from 21.3 to 85.8. The mean time of implantation for men was 4.4 years (SD=4.1), while for women the mean time was 4.7 years (SD=3.4).

Table 2 shows the clinical characteristics of the patients related to the implantable cardioverter-defibrillator.

**Table 2** – Clinical characteristics of patients related to Implantable cardioverter-defibrillator according to gender. Ribeirão Preto, SP, Brasil, 2018-2019 (n=76)

Variables	Men (n=46)	Women (n=30)	p
	n(%)	n(%)	
Previous family history of coronary disease	63.3 (29)	70.0 (21)	0.532*
Previous family history of sudden death	45.7 (21)	60.0 (18)	0.221*
Indication of primary prevention of the device	76.1 (35)	70.0 (21)	0.556*
Indication of secondary prevention of the device	23.9 (11)	31.0 (9)	0.556*
Basic clinical diagnosis			
Chagas' Cardiomyopathy	42.2 (19)	20.7 (6)	0.053*
Hypertrophic Cardiomyopathy	17.8 (8)	13.8 (4)	0.446†
Ischemic Cardiomyopathy	13.3 (6)	13.8 (4)	0.615†
Dilated cardiomyopathy	11.1 (5)	31.0 (9)	0.035*
Not described in the medical record	15.6 (7)	20.7 (6)	
Associated diseases			
Systemic arterial hypertension	37.0 (17)	53.3 (16)	0.159*
Chagas' disease	32.6 (15)	13.3 (4)	0.049†
After device implantation			
Presence of shock	15.2 (7)	3.3 (1)	0.099†
Presence of syncope	0	3.3 (1)	0.395†

\*Chi-square test; †Fisher's Exact Test

It is observed that women were more frequently diagnosed with dilated cardiomyopathy, whi

le men were more frequently diagnosed with Chagas' disease.

Regarding the medical diagnosis of anxiety and depression, only one woman (3.3%) was diagnosed with anxiety, while three women (10.0%) were diagnosed with depression. In addition, one man (2.2%) was diagnosed with depression. Table 3 presents the results of anxiety, depression and cardiac anxiety symptoms, according to gender and age.

Regarding gender, it was found that women with implantable cardioverter-defibrillator had higher medians in both anxiety and depression symptoms when compared to men, and these differences were statistically significant. Women still had higher medians when compared to men in symptoms of cardiac anxiety, both in total score and in domains of cardiac anxiety, however, the differences found were not statistically significant.

Adult patients with implantable cardioverter-defibrillator had a higher median when compared to the elderly in anxiety symptoms and in the "Fear and Hypervigilance" domain of cardiac anxiety symptoms, however, the differences found were not statistically significant. On the other hand, elderly patients with implantable cardioverter-defibrillator had higher median when compared with adults in symptoms of depression, cardiac anxiety and "Avoidance" of cardiac anxiety, but the differences were not significant either.

**Table 3** – Comparison of anxiety, depression and cardiac anxiety symptoms of patients with Implantable cardioverter-defibrillator according to gender and age. Ribeirão Preto, SP, Brazil, 2018-2019 (n=76)

Variables	Gender		Age	
	Male(n=46)	Female (n=30)	Adults (n=52)	Elderly (n=24)
*HADS - anxiety				
Median (Min.-Max.)†	4.0 (0-18)	7.0 (1-21)	6,0 (0-18)	4,5 (1-21)
p‡		0.036		0.844
HADS - depression				
Median (Min.-Max.)†	3.0 (0-16)	6.0 (0-21)	3,0 (0-16)	4,5 (0-21)
p		0.004		0.822
Total Score Cardiac Anxiety				
Median (Min.-Max.)	31.5 (8-54)	38.0 (0-50)	32,5 (8-54)	33,5 (0-50)
p		0.192		0.679
Avoidance domain				
Median (Min.-Max.)	16.5 (0-20)	17.0 (0-20)	17 (0-20)	18 (0-20)
p		0.603		0.791
Fear and Hypervigilance Domain				
Median (Min.-Max.)	13.0 (1-34)	19.0 (0-34)	16 (4-34)	15 (0-32)
p		0.180		0.320

\*HADS: Hospital Anxiety and Depression Scale; †(Min.-Max.): minimum and maximum values; ‡valor of p from the Mann-Whitney test for independent women

## Discussion

Regarding the limitations of the present study, we highlight the scarcity in the literature of similar studies that address the possible relationship of gender and age with symptoms of anxiety, depression and cardiac anxiety among patients with implantable cardioverter-defibrillator, which made it difficult to compare and deepen the discussions. In addition, the number of study participants and the type of sampling, consecutive and non-probabilistic, are also considered limitations of the study. It was not possible to obtain the calculation of the sample size, since we did not know the variance of the response variables investigated here. In view of the above, the results of the hypothesis tests presented here are exploratory and not confirmatory.

In this sense, now with the knowledge of the variability of anxiety, depression and cardiac anxiety symptoms in patients with implantable cardioverter-defibrillator, longitudinal studies may elucidate the impact of device dependence on the life of these people, approaching the individual from preoperative to a few years after the implant.

Regarding the socio-demographic characteristics of the screen study, these corroborate those observed in other studies on the emotional state of patients with implantable cardioverter-defibrillator, with the predominance of male patients, adults, married, professionally inactive, with low schooling and monthly income and with implantation time of up to five years<sup>(13-15)</sup>.

Regarding clinical characteristics, among the basic heart diseases, the most frequent for men was Chagas' cardiomyopathy, while for women there was a predominance of dilated cardiomyopathy. When the two groups are added together, the most frequent heart disease in the sample was Chagas' cardiomyopathy. These results do not corroborate the findings in the literature, in which ischemic cardiomyopathy is considered the most prevalent<sup>(13)</sup>. A possible explanation for this difference may be the fact that the hospital where this study was conducted is a referen-

ce center for the treatment of Chagas' Disease of the Regional Department of Health XVIII, São Paulo State.

In the sample studied, 15.2% of men reported the presence of inappropriate shock after the implantation of the implantable cardioverter-defibrillator, while only 3.3% of women presented it. These results differ from a Brazilian study in which the frequency was higher, i.e., 47.6% of 119 patients interviewed<sup>(13)</sup>. In another literature review study, European researchers identified this type of shock by reporting about one quarter to one third of patients with implantable cardioverter-defibrillator<sup>(16)</sup>.

This type of shock is still considered the main complication for patients with implantable cardioverter-defibrillator. When experiencing this type of shock, the patient may present symptoms of anxiety, generalized discomfort, pain, in addition to the consequences for the cardiac device itself, such as early battery depletion and ventricular tachy-arrhythmias induced by inappropriate shock<sup>(16)</sup>.

Returning to the association found in this study with the symptoms of anxiety and depression in patients with implantable cardioverter-defibrillator, no studies have been found in the literature so far. In a study conducted in Brazil with patients with valve heart disease and coronary artery disease in the preoperative period of heart surgery, the authors showed that women also presented more symptoms of anxiety and depression, and the greatest difference was in symptoms of anxiety<sup>(7)</sup>.

In general, the reasons why women with some heart disease present anxiety and depression symptoms more frequently are not elucidated in the literature and need to be investigated further. However, some aspects have been raised, such as psychosocial factors such as the accumulation of functions imposed by society, such as responsibility for home, children and work. Biological factors such as female sex hormones have also been related to the greater symptomatology of anxiety and depression in women with heart diseases<sup>(17)</sup>.

The investigation of anxiety, depression and cardiac anxiety symptoms, as well as early treatment,

may help in planning the care of these patients, since there are already descriptions in the literature about cardiopathic individuals with a high degree of anxiety and/or depression tending to present a lower compliance to the proposed treatment, increasing morbidity and mortality<sup>(18-19)</sup>.

Regarding the experience of implantable cardioverter-defibrillator implantation, as well as the physical and psychological adaptation of these patients, six feelings commonly referred to by individuals were found in the literature: perceptions of fear, insecurity, anxiety, dependence, need for support and information<sup>(6)</sup>, which justifies the need for specific interventions such as support groups for individuals with the device and their caregivers/families, sexual counseling and psychological orientation<sup>(20)</sup>.

One of the main roles of the surgical nurse is health education; this education must begin with the indication of the surgery, going through the perioperative period. With the evidence from this investigation, we observed that women with implantable cardioverter-defibrillator present more frequently the symptoms of anxiety and depression when compared to men. These results may be incorporated into the actions developed in health care institutions that treat patients with cardioverter defibrillator, thus favoring treatment beyond the doctor-biological. In view of the above, the health services that attend these patients may adopt strategies to evaluate and monitor the emotional state of the patients, since this monitoring will take place throughout the life of these patients, and currently it is observed that the consultation is directed to the evaluation of the device itself.

Support groups during returns with the presence of multidisciplinary professionals may favor the evaluation and monitoring of the emotional state of patients with implantable cardioverter-defibrillator.

## Conclusion

In this study, a relationship was found between the gender of patients with implantable cardioverter-defibrillator and symptoms of anxiety and depres-

sion, with women presenting more symptoms when compared with men. No relationship was found between the symptoms of cardiac anxiety and gender, and no relationship was found between age and symptoms of anxiety, depression and cardiac anxiety.

## Collaborations

Ignácio IB, Fernandes PA, Maier SRO and Desotte CAM contributed to the conception and design, analysis and interpretation of the data, to the writing of the article, relevant critical review of the intellectual content and final approval of the version to be published.

## References

1. Ministério da Saúde (BR). Informações de Saúde. Informações epidemiológicas e morbidade. Secretaria Executiva. Datasus [Internet]. 2020 [cited Set 1, 2020]. Available from: <http://tabnet.datasus.gov.br/cgi/tabcgi.exe?sih/cnv/qiuf.def>
2. Sociedade Brasileira de Arritmias Cardíacas. Arritmias cardíacas e morte súbita [Internet]. 2019 [cited Set 1, 2020]. Available from: <https://sobrac.org/home/arritmias-cardiacas-emorte-subita/>
3. Fauci AS. Harrison Medicina Interna. Rio de Janeiro: McGraw-Hill do Brasil; 2016.
4. Pasyar N, Sharif F, Rakhshan M, Nikoo MH, Navab E. Patients' experiences of living with implantable cardioverter defibrillators. *Int Cardiovasc Res J* [Internet]. 2017 [cited Set 1, 2020];11(3):108-14. icrj.10960. Available from: <https://sites.kowsar-pub.com/ircrj/article/s/10960.html>
5. Silva LDC, Caminha ELC, Ferreira NS. Quality of life of individuals with implantable electronic cardiac device. *Rev Enferm UERJ*. 2019; 27:e45014. doi: <https://doi.org/10.12957/reuerj.2019.45014>
6. Ronick PV, Campos EMP. Pânico e desamparo em pacientes com cardioversor desfibrilador implantável. *Rev SBPH* [Internet]. 2017 [cited Set 1, 2020];20(1):99-121. Available from: [http://pep-sic.bvsalud.org/scielo.php?script=sci\\_abstract&pid=S1516-08582017000100007&lng=pt&nrm=iso](http://pep-sic.bvsalud.org/scielo.php?script=sci_abstract&pid=S1516-08582017000100007&lng=pt&nrm=iso)

7. Rodrigues HF, Furuya RK, Dantas RAS, Dessotte CAM. Anxiety and depression in cardiac surgery: sex and age range differences. *Esc Anna Nery*. 2016; 20(3):e20160072. doi: <https://doi.org/10.5935/1414-8145.20160072>
8. Pfeiffer E. A short portable mental status questionnaire for the assessment of organic brain deficit in elderly patients. *J Am Geriatr Soc*. 1975; 23(10):433-41. doi: <https://doi.org/10.1111/j.1532-5415.1975.tb00927.x>
9. Zigmond AS, Snaith RP. The hospital anxiety and depression scale. *Acta Psychiatr Scand*. 1983; 67(6):361-70. doi: [10.1111/j.1600-0447.1983.tb09716.x](https://doi.org/10.1111/j.1600-0447.1983.tb09716.x)
10. Botega NJ, Bio MR, Zomignan IMA, Garcia JRC, Pereira WAB. Transtornos do humor em enfermagem de clínica médica e validação de escala de medida (HAD) de ansiedade e depressão. *Rev Saúde Pública*. 1995; 29(5):355-6. doi: <https://doi.org/10.1590/S0034-89101995000500004>
11. Eifert GH, Thompson RN, Zvolensky MJ, Edwards K, Frazer NL, Haddad JW, et al. The Cardiac Anxiety Questionnaire: development and preliminary validity. *Behav Res Ther*. 2000; 38(10):1039-53. doi: [https://doi.org/10.1016/s0005-7967\(99\)00132-1](https://doi.org/10.1016/s0005-7967(99)00132-1)
12. Sardinha A, Nardi AE, Araújo CGS, Ferreira MC, Eifertt GH. Validação da versão Brasileira do Questionário de Ansiedade Cardíaca. *Arq Bras Cardiol*. 2013; 101(6):554-61. doi: <https://doi.org/10.5935/abc.20130207>
13. Guimarães TB, Pinheiro ADO, Oliveira C, Siqueira S, Nishioka SDO, Martinelli Filho M. Relevância de fatores psicossociais e da ocorrência de choques do cardioversor-desfibrilador implantável na percepção da doença cardíaca como ameaça: um estudo COMFORT-CDI. *Rev SBPH [Internet]*. 2016 [cited Set 1, 2020];19(1):117-32. Available from: <http://pepsic.bvsalud.org/pdf/rsbph/v19n1/v19n1a08.pdf>
14. Wong MFF. Factors associated with anxiety and depression among patients with implantable cardioverter defibrillator. *J Clin Nurs*. 2017; 26(9-10):1328-37. doi: <https://doi.org/10.1111/jocn.13637>
15. Silva, KR, Costa R, Melo GRGO, Rebutini R, Benedetto MS, Nagumo MM, et al. Validity evidence of the Brazilian version of the Florida Shock Anxiety Scale for patients with implantable cardioverter defibrillators. *Arq Bras Cardiol*. 2020; 114(5):764-72. doi: <https://doi.org/10.36660/abc.20190255>
16. Tzeis S, Andrikopoulos G, Kolb C, Vardas P. Tools and strategies for the reduction of inappropriate implantable cardioverter defibrillator shocks. *Europace*. 2008; 10(11):1256-65. doi: <https://doi.org/10.1093/europace/eun205>
17. Shanmugasagaram S, Russell KL, Kovacs AH, Stewart DE, Grace SL. Gender and sex differences in prevalence of major depression in coronary artery disease patients: a meta-analysis. *Maturitas*. 2012; 73(4). doi: <https://doi.org/10.1016/j.maturitas.2012.09.005>
18. Morais ER, Carvalho CS, Euqueres L, Viana FP, Fantinati AMM, Rassi S. Qualidade de vida e sintomas de depressão e ansiedade em portadores de insuficiência cardíaca crônica. *Rev Ciênc Ambientais Saúde [Internet]*. 2018 [cited Set 1, 2020];45(1):71-9. Available from: <http://seer.pucgoias.edu.br/index.php/estudos/article/view/6286>
19. Cordeiro ALL, Freire L, Mendes R, Bastos A, Carvalho S, Melo T, et al. Aplicação do questionário de ansiedade cardíaca no pós-operatório de cirurgia cardíaca. *Rev Bras Prescriç Fisiol Exerc [Internet]*. 2015 [cited Set 1, 2020];9(56):592-6. Available from: <http://www.rbpfex.com.br/index.php/rbpfex/article/view/812>
20. Carroll AJ, Christon LM, Rodrigue JR, Fava JL, Frisch MB, Serber ER. Implementation, feasibility, and acceptability of quality of life therapy to improve positive emotions among patients with implantable cardioverter defibrillators. *J Behav Med*. 2020; 43(6):968-78. doi: <https://doi.org/10.1007/s10865-020-00153-2>



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