HEALTH-RELATED QUALITY OF LIFE OF PATIENTS WITH PERMANENT CARDIAC PACING

Sumaya dos Santos Gonçalo[1]
Elisa Maia de Oliveira Grotti[2]
Rejane Kiyomi Furuia[3]
Rosana Aparecida Spadoti Dantas[1]
Lídia Aparecida Rossi[1]
Carina Aparecida Marosti Dessotte[1]

[1]Universidade de São Paulo, Escola de Enfermagem de Ribeirão Preto, Programa de Pós-Graduação em Enfermagem Fundamental. Ribeirão Preto, São Paulo, Brasil.
[2]Universidade de São Paulo, Escola de Enfermagem de Ribeirão Preto. Ribeirão Preto, São Paulo, Brasil.
[3]Instituto Federal do Paraná, Campus Londrina. Londrina, Paraná, Brasil.

ABSTRACT

Objective: to assess the health-related quality of life of patients with a permanent cardiac pacemaker.

Method: descriptive, observational, cross-sectional study conducted in the arrhythmia outpatient unit of a university hospital located in the interior of São Paulo, Brazil. The consecutive and non-probabilistic sample was composed of both sexes, older than 29 years old, having a pacemaker for at least one month. Those lacking the cognitive condition to answer the questionnaires, as well as those with dyspnea, weakness, or fatigue at the time the instruments were applied, or with an implantable cardioverter defibrillator, were excluded. The generic instrument Medical Outcomes Study 36 - Item Short-Form Health Survey, composed of 36 questions distributed into eight domains along with the specific instrument Assessment of Quality of Life and Related Events, composed of 20 questions distributed into three domains, were used to assess health-related quality of life.

Results: 88 patients participated; most were men, had a partner, and were aged 64.3 (±13) years old on average. The domains from the Medical Outcomes Study 36 that obtained the highest means, that is, were the best-rated, were Social Functioning (78.1; ±26.8) and Emotional Well-Being (68.2; ±23.9), while the lowest means were obtained by Physical Health (48.2; ±41.4) and Physical Functioning (58.5; ±27.9). In regard to the Assessment of Quality of Life and Related Events, the Arrhythmia domain had the highest mean and best quality of life (78.2; ±20.7), while the lowest mean was Dyspnea (71.1; ±26.8).

Conclusion: the patients gave the highest health-related quality of life ratings in regard to mental domains and the lowest ratings for the physical domains.

DESCRIPTORS: Pacemaker, artificial. Quality of life. Nursing. Postoperative care. Arrhythmias, Cardiac.

QUALIDADE DE VIDA RELACIONADA À SAÚDE DE PACIENTES COM MARCA-PASSO CARDÍACO DEFINITIVO

RESUMO

Objetivo: avaliar a qualidade de vida relacionada à saúde de pacientes com marca-passo cardíaco definitivo.
Método: estudo observacional descritivo, transversal, realizado no ambulatório de arritmia de um hospital universitário do interior paulista. Amostra consecutiva e não probabilística foi constituída de pacientes de ambos os sexos, maiores de 18 anos, com marca-passo há pelo menos um mês. Foram excluídos os que não apresentaram condições cognitivas para responder aos questionários, como também aqueles que apresentaram dispneia, fraqueza e fadiga no momento da aplicação dos instrumentos e com cardioversor desfibrilador implantável. Para a avaliação da qualidade de vida relacionada à saúde, utilizou-se o instrumento genérico *Medical Outcomes Study 36 - Item Short-Form Health Survey*, composto por 36 questões distribuídas em oito domínios, e o instrumento específico *Assessment of Quality of Life and Related Events*, composto por 20 questões distribuídas em três domínios.
Resultados: participaram 88 pacientes, a maioria do sexo masculino e com companheiro, com a média de idade de 64,3 (±13). Os domínios que apresentaram maiores médias, assim como melhores avaliações, foram Aspectos Sociais (78,1; ±26,8) e Saúde Mental (68,2; ±23,9), e as menores foram em Aspectos Físicos (48,2; ±41,4) e Capacidade Funcional (58,5; ±27,9), referentes ao *Medical Outcomes* Study 36. Quanto ao *Assessment of Quality of Life and Related Events*, o domínio de maior média e melhor qualidade de vida foi Arritmia (78,2; ±20,7), e o de menor, Dispneia (71,1; ±26,8).
Conclusão: os pacientes apresentaram melhores avaliações da qualidade de vida relacionada à saúde nos domínios mentais e piores nos domínios físicos.

DESCRITORES: Marca-passo artificial. Qualidade de vida. Enfermagem. Cuidados pós-operatórios. Arritmias cardíacas.

CALIDAD DE VIDA RELACIONADA CON LA SALUD DE PACIENTES CON MARCAPASO CARDÍACO DEFINITIVO

RESUMEN

Objetivo: evaluar la calidad de vida relacionada con la salud de pacientes con marcapaso cardíaco definitivo.
Método: estudio observacional descriptivo, transversal, realizado en el ambulatorio de arritmia de un hospital universitario del interior del estado de Sao Paulo. La muestra consecutiva y no probabilística estuvo constituida de pacientes de los dos sexos, mayores de 18 años, con marcapaso hace, por lo menos, un mes. Fueron excluidos los que no presentaron condiciones cognitivas para responder a los cuestionarios, como también aquellos que presentaron disnea, debilidad y fatiga, en el momento de la aplicación de los instrumentos; y, también aquellos con desfibrilador cardioversor implantable. Para la evaluación de la calidad de vida relacionada con la salud, se utilizó el instrumento genérico *Medical Outcomes Study 36 - Item Short-Form Health Survey*, compuesto por 36 preguntas distribuidas en ocho dominios, y el instrumento específico *Assessment of Quality of Life and Related Events*, compuesto por 20 preguntas distribuidas en tres dominios.
Resultados: participaron 88 pacientes, la mayoría del sexo masculino y con compañero, con edad media de 64,3 (±13) años. Los dominios que presentaron mayores medias, así como mejores evaluaciones, fueron Aspectos Sociales (78,1; ±26,8) y Salud Mental (68,2; ±23,9), y las menores fueron Aspectos Físicos (48,2; ±41,4) y Capacidad Funcional (58,5; ±27,9), referentes al *Medical Outcomes* Study 36. En cuanto al *Assessment of Quality of Life and Related Events*, el dominio de mayor media y mejor calidad de vida fue Arritmia (78,2; ±20,7), y el de menor, Disnea (71,1; ±26,8).
Conclusión: los pacientes presentaron mejores evaluaciones de la calidad de vida relacionada con la salud en los dominios mentales y peores en los dominios físicos.

DESCRIPTORES: Marcapaso artificial. Calidad de vida. Enfermería. Cuidados posoperatorios. Arritmias cardíacas.

INTRODUCTION

The heart is an essential organ for the maintenance of life. It works like a pump, promoting blood circulation, and its electrical system controls rhythm and rate. When this electrical system does not work properly, it triggers arrhythmias that compromise its function and in some cases, a permanent pacemaker implantation (PPI) is indicated.[1]

The Brazilian Registry of Cardiac Pacemakers, Resynchronization Devices, and Defibrillators reports 306,886 surgeries were conducted in Brazil from January 5th, 1990 (when the first surgery was conducted) up to December 31st 2014. Of these,216,537 are first implants (190,747 PPI;13,725 cardiac defibrillators;6,683 resynchronization devices;4,052 cardiac defibrillators with resynchronization; while information regarding 1,330 surgeries is missing) and 90,349 are replaced devices.[2]

Patients receiving a PPI present physical limitations accruing from their prior clinical condition. Many patients experience palpitations, chest pain, dyspnea, and fatigue, among other symptoms. Symptoms are expected to improve after a PPI, improving quality of life, however, there may be complications, such as device malfunction, infection, PPI syndrome, and changes in a patient's daily routine caused by the device. It is important in this context to assess the Health-Related Quality of Life (HRQoL) of patients receiving a PPI to identify their needs and how the device has impacted their lives. Results are expected to support the planning of care directed to this clientele, focusing on aspects that harm quality of life. This study is also expected to support new research, including longitudinal studies and clinical trials with interventions intended to improve the quality of life of this population.

The literature shows both Brazilan[3–5] and international studies[6–8] addressing the HRQoL of patients receiving a PPI that present certain characteristics concerning age, sex, and length of pacemaker implantation. Most studies,[6–8] however, fail to report the patients' socioeconomic information, while patients obtain mean HRQoL scores that are considered satisfactory.[3–8]

Integrative reviews addressing the HRQoL of individuals with a pacemaker include the same studies reported here, concluding that the implantation of a pacemaker improved the quality of life of individuals with cardiovascular diseases as they felt integrated with social life, their symptoms subside, and they start exercising.[9–10]

Even though the guidelines for implantation and follow-up are well-established and the clinical characteristics, as well as mean age and sex of the population are similar, Brazilian studies do not include individuals whose devices were implanted in the last three years.[3–5] The importance of this study is justified by rapid technological changes, a lack of studies addressing HRQoL in this population; and the fact that no studies addressing the HRQoL among individuals whose devices were implanted in the last three years were found. Thus, this study's objective was to assess the HRQoL of patients with permanent cardiac pacing.

METHOD

This observational descriptive, cross-sectional study with a quantitative approach was conducted in the cardiac arrhythmia outpatient unit of a university hospital located in the interior of São Paulo, Brazil.

A consecutive and non-probabilistic sample was composed of patients who met the following inclusion criteria: either sex, older than 18 years of age, regardless of social class or race, having had a single-chamber or dual-chamber permanent peacemaker for at least one month.

Patients lacking the cognitive condition to answer the questionnaires or presenting dyspnea, weakness or fatigue at the time the instruments were applied, or with a multisite pacemaker or implantable cardioverter defibrillator (ICD), were excluded.

Six questions were used to identify patients with an adequate cognitive condition, four of which were adapted from an instrument available in the literature:[11] What day is today?", "What is your age?", "What day of the week it is?", "What is the name of the place where we are right now?, in addition to two questions developed by Brazilian researchers:[12] "What is your full name?" and "What is the name of the city where you were born?". Those not able to answer three or more questions correctly were excluded from the study. Data were collected from April 2015 to September 2017.

Based on a literature review, an instrument was developed to address the following: sociodemographic variables (sex, age, marital status, schooling, occupation, and monthly income); clinical variables (reason for the outpatient return visit, underlying cardiac disease, and associated diseases); and PPI-related variables (date of the implantation, type: single or dual-chamber, when the generator was replaced and why, when the electrode was replaced and why, when the PPI was replaced and why, post-implantation complications, type of complications, length of implantation).

The Brazilian version[14] of the generic instrument Medical Outcomes Study 36 - Item Short-Form Health Survey (SF-36),[13] and an instrument specific to assessing HRQoL among patients with PPI, the Brazilian version[16] of the Assessment of Quality of Life and Related Events (AQUAREL),[15] were used. The patients' HRQoL were individually assessed by one of the researchers who read each item of each of the instruments, along with the alternative answers, and checked the alternatives patients indicated. These instruments were chosen based on recommendations reported in the literature in terms of reliability, internal consistency, responsiveness, and interpretabiity,[15] while the frequency with which these instruments are used to assess HRQoL in this population was also taken into account.

Authorization was obtained to use the aforementioned instruments even before the study was initiated, that is, during the time we were developing the study project.

The SF-36 is a multidimensional generic instrument composed of 36 items comprising eight domains: Physical Functioning (10 items); Physical Health (four items); Pain (two items); General Health (five items); Energy/Fatigue (four items); Social Functioning (two items); Emotional Problems (three items); Emotional Well-Being (five items); and one question to compare current health to health of a year ago.

The instrument assesses both negative (diseases/illnesses) and positive aspects (well being).[13] The scores obtained for each of the domains are normalized on a scale of zero to 100 on which lower scores reflect worse HRQoL. To answer the questionnaire, patients are instructed to consider the past four weeks.

The eight domains contained in the SF-36 may be transformed into two summary measures: Mental Component Summary and Physical Component Summary, which were also used in this study. Each summary measure is scored from zero to 100, in which zero means the worst possible HRQoL and 100 means the best possible HRQoL.

The instrument specific to assessing the HRQoL of patients with PPI, the AQUAREL, is composed of 20 questions distributed into three domains: Chest discomfort (eight questions); Arrhythmia (five questions); and Dyspnea on exertion (seven questions). Each question in AQUAREL has five categories of answers with scores ranging from one to five. The scores obtained for each domain are normalized on a scale from zero to 100, in which low scores reflect poor HRQoL. This instrument is used as an extension of SF-36.[15] Patients were supposed to consider the last four weeks to answer the items.

Data were double entered into the Microsoft Office Excel 2010 for subsequent validation. After validating the database, data were transferred to the IBM SPSS version 22.0 for Windows (SPSS, Inc., Chicago, IL, USA). Descriptive analysis using simple frequency for nominal or categorical variables was used, along with central tendency (mean and median) and dispersion measures, used for the numerical variables.

The study was conducted in accordance with the ethical guidelines provided by Resolution 466/12, Brazilian Council of Health, and approved by the Institutional Review Board.

RESULTS

A total of 117 patients were invited to participate in the study: 10 of these refused to participate; three started answering the questionnaire, but had to interrupt it to attend their medical consultations and refused to complete it when their consultations were over; four were excluded because of problems understanding and completing the SF-36, while 12 did complete the instruments, but their medical files revealed that two of these individuals had an ICD and ten had multisite pacing, thus, had to be excluded.

The final sample was composed of 88 patients who met the inclusion criteria and agreed to participate in the study.

Table 1 presents the patients' sociodemographic characterization.

Table 1 – Sociodemographic characterization according to sex, age, schooling, marital status, occupation, family income, and reason for medical visit. Ribeirão Preto, Brazil, 2016-2017. (n=88)

Variable	n (%)	Mean (SD)*	Median	Interval
Sex				
Male	46 (52.3)			
Female	42 (47.7)			
Age		64.3 (13.0)	67.0	20.9 - 92.8
Schooling (years)		5.0 (3.8)	4.0	0 -16
Marital Status				
Partner	59 (67.0)			
No partner	29 (33.0)			
Occupation				
Inactive	70 (79.5)			
Active	18 (31.5)			
Family income (Reais)		1.997.55 (1.609.05)	1.618.00	0 -10.000.00
Reason for return visit				
Routine	82 (93.2)			
Malaise	3 (3.4)			
Assessment for other types of surgeries	1 (1.1)			
Pain at the implant site	1 (1.1)			
Release for dental treatment	1 (1.1)			

*Mean (SD): Mean (Standard-Deviation)

Most patients were men, had a partner, were not working at the time of their return visit, and were having a routine consultation. The participants were older, with an average age of 60 years old. Additionally, patients reported a low educational level and low monthly income.

In regard to the underlying heart disease: 59 (67.0%) patients had a total atrioventricular block (AV block); 11 (12.5%) had sinus node dysfunction (SND); 10 (11.4%) a second-degree AV block; three (3.4%) a bundle branch block; one (1.1%) had a first-degree AV block; and one (1.1%) had bradycardia. The medical files of three patients (3.4%) did not report their underlying diseases.

The associated diseases most frequently found were systemic arterial hypertension (n=45; 51.1%), Chagas disease (n=37; 42%), dyslipidemia (n=12; 13.6%), coronary artery disease (n=12; 13.6%), and atrial fibrillation (n=11; 12.5%).

Table 2 presents the descriptions of PPI related variables.

Table 2 – Characterization of patients according to the type of pacemaker, generator replacement, reason for replacing the generator, electrode replacement, reason for replacing the electrode, pacemaker replacement, reason for replacing pacemaker, complications after implantation, and type of complications. Ribeirão Preto, SP, Brazil, 2016-2017. (n=88)

Variable	n (%)
Type of pacemaker	
Dual-chamber	84 (95.5)
Single-chamber	4 (4.5)
Generator replacement	
No	47 (53.4)
Yes	41 (46.6)
Reason for replacing generator (n=41) [†]	
Worn out	41 (100.0)
Electrode replacement	
No	80 (90.9)
Yes	8 (9.1)
Reason for replacing electrode (n=8) [†]	
Sensitivity/stimulation failure	4 (50.0)
Fracture	2 (25.0)
Extrusion	1 (12.5)
Infection	1 (12.5)
Pacemaker replacement	
No	80 (90.9)
Yes	8 (9.1)
Reason for replacing pacemaker (n=8) [†]	
Infection	3 (37.5)
Change to dual-chamber	3 (37.5)
Extrusion	1 (12.5)
Sensitivity/stimulation failure	1 (12.5)
After-implantation complications	
No	84 (95.5)
Yes	4 (4.5)
Type of complication (n=4) [†]	
Infection	2 (50.0)
Extrusion	1 (25.0)
Misplaced/tensioned cable	1 (25.0)

†Percentages consider only those patients whose devices were worn out, replaced or presented a complication.

Note that patients with dual-chamber PPI predominate, while 41 (46.6%) already had replaced the generator due to wear. The frequency with which electrode and the PPI itself is changed, as well as the occurrence of complications after implantation, was low.

The average duration of PPI was 10.4 years (standard-deviation=8.7; median=8.1), ranging from 0.09 to 39.9 years.

Table 3 presents the descriptive analysis of SF-36's eight domains and the Mental Component and Physical Component Summaries along with the AQUAREL's three domains.

Table 3 – Descriptive of the SF-36's eight domains and Mental Component and Physical Component summaries along with the AQUAREL's three domains. Ribeirão Preto, SP, Brazil, 2016-2017. (n=88)

Instruments' components	Mean (SD)*	Median	Interval
SF-36[†] Domains			
Social Functioning	78.1 (26.8)	87.5	0-100
Emotional Well-Being	68.2 (23.9)	68.0	4-100
General Health	64.3 (24.0)	69.5	5-100
Pain	61.1 (24.3)	60.0	0-100
Energy/Fatigue	60.7 (25.3)	62.5	0-100
Emotional Problems	60.6 (43.9)	66.6	0-100
Physical Functioning	58.5 (27.9)	65.0	0-100
Physical Health	48.2 (41.4)	50.0	0-100
SF-36[†] Components Summary			
Mental	49.8 (12.0)	50.5	20.3-67.4
Physical	40.8 (9.9)	40.7	20.2-61.2
AQUAREL[‡] Domains			
Arrhythmia	78.2 (20.7)	85.0	30-100
Chest Discomfort	77.7 (22.9)	82.8	25-100
Dyspnea	71.1 (26.8)	75.0	0-100

*Mean (Standard-Deviation); †SF-36: Medical Outcomes Study 36 - Item Short-Form Health Survey; ‡AQUAREL: Assessment of Quality of Life and Related Events

The domain that obtained the highest mean in the sample was Social Functioning, followed by Emotional Well-Being, while the domain with the lowest mean was Physical Health, followed by Physical Functioning; that is, highest scores were obtained in the mental domains, while the lowest scores were obtained in the physical domains.

The AQUAREL's domain with the highest mean was Arrhythmia and the domain with the lowest score was Dyspnea.

DISCUSSION

The HRQoL of patients with PPI was assessed in this study and the domains that obtained the highest scores were Social Functioning and Emotional Well-Being, while Physical Health and Physical Functioning obtained the lowest scores. These results match those reported in both Brazilian[3,17] and international studies.[6]

Even though Emotional Well-Being and Emotional Problems domains belong to the Mental Component, we note that in this study, and also in other studies,[3,5,18] the domain Emotional Well-Being is always best evaluated, while Emotional Problems are poorly rated. This may be explained by the nature of the questions composing each domain. In the Emotional Well-Being domain, patients are asked whether they consider themselves to be a nervous person, a very blue person to the point that nothing can cheer them up, calm and quiet, whether s/he feels discouraged/depressed, or is a happy person. The questions in the Emotional Problems, however, focus on the aspects that interfered in their occupational tasks and regular daily tasks. Patients are asked whether they had to cut down the amount of time spent on work, whether they accomplished less than they desired, and whether they were less attentive than usual. In this sample, 79.5% of the patients were not working at the time of data collection and we did not ask the reason. This lack of information may be considered a limitation because patients may have retired due to the heart disease, which in turn may contribute to one's worse perception of the Emotional Problems domain. It should be noted, though, that two integrative literature reviews report that individuals feel a greater disposition to perform tasks and have a better social life after they have a pacemaker implanted.[9–10]

A study that used the Quality of Life Index Cardiac Version - IV to assess HRQoL reports that the items assessing Family relationships were better rated.[19]

The domain in this study that patients rated the worst, as well as in other studies,[3,5,18] was Physical Health, which was also composed of questions that asked patients to asses the impact of their physical condition on their work activities and regular daily tasks. Patients are asked whether they had to decrease their workload, accomplished less than they would have liked, were limited in the kind of work they could do, or had difficulties working or performing other tasks.

The Physical Functioning domain assessed in this study was the second worst rated, as it is usually the worst rated in other studies.[3,5,18] These results may reflect impairment imposed by the underlying heart disease itself, considering patients are asked whether they had difficulties performing tasks that required vigorous or moderate exertion to lift or carry groceries, climb several flights of stairs, bend, kneel or stoop, walk short and long distances and finally, bathe or dress.

The Social Functioning domain was the domain best rated by this study sample and by patients addressed in different studies.[3,5,18] The questions in this domain asked patients about their health and/or physical or emotional health problems, and how these problems interfered in their social lives. Note the patients addressed in this study reported low Family monthly income and patients with a low income do not have many leisure opportunities, which may explain why patients did not notice any changes in this domain caused by potential problems of a physical or emotional nature.

Brazilian authors conducted one study intending to present descriptive measures of scores obtained on the SF-36's scales and components according to sex and age, obtained by a probabilistic sample of Brazilian households. A total of 12,423 Brazilian men and women, older than 18 years of age, randomly selected from rural and urban areas of the five Brazilian regions, participated. When the HRQoL of the population in general is compared to the results obtained in this study, we verify that the HRQoL reported here is lower in all the SF-36 domains, as well as in the mental and physical components.[20]

In regard to the results concerning the patients' HRQoL assessed using the AQUAREL, the three domains presented means above 70.0 and the best rated domain was Arrhythmia, followed by Chest Discomfort and Dyspnea. Considering that the AQUAREL is an instrument specific to assessing HRQoL among patients with PPI and that its questions assess physical signs and symptoms accruing from the underlying disease, we believe that the PPI may have contributed to better HRQoL assessments as an appropriate treatment for heart disease. Nonetheless, such inference could only be confirmed through longitudinal studies, in which HRQoL would be assessed before and after the device was implanted.

One longitudinal study conducted in Italy assessed two groups of individuals with a cardiac pacemaker, with and without remote follow-up, and verified that HRQoL assessed by the AQUAREL resulted in better scores obtained by the group with remote follow-up in the three first months of follow-up, especially in the domains Arrhythmia and Chest Discomfort.[21]

Similar to this study's results, other studies using the AQUAREL to assess the HRQoL among patients with PPI report that the domain with the worst score was Dyspnea. All these studies, however, report the domain that was best rated as being Chest Discomfort, which diverges from this study's results, in which Arrhythmia was the domain best rated. The mean scores obtained in the domains Chest Discomfort and Arrhythmia reported by other studies were either very close or over 70.0.[3–5,18]

The domain Chest Discomfort asks whether patients experience any pain, tightness, or weight on their chest in situations that did not require any exertion, like resting, and in situations involving more vigorous tasks, such as climbing stairs or exercising. The Arrhythmia domain addresses whether patients experience lower limb edema, irregular heart beat or syncope. The Dyspnea domain investigates the presence of dyspnea in situations such as resting before more vigorous tasks; whether dyspnea hinders exercising, and whether patients experience fatigue even after a night of sleep, whether fatigue and lack of energy hinder daily tasks or require them to stop tasks to rest.[15]

The sociodemographic and clinical characteristics of this study's sample were similar to those reported by other studies.[3–5,22] The average age of patients was older than 60 years old, reflecting increased life expectancy and a consequent increase in the elderly population. The most frequent disease was third-degree AV block followed by SND, which corroborates with Brazilian Registry of Cardiac Pacemakers, Resynchronization Devices, and Defibrillators, according to which, the main electrocardiographic diagnoses in the 2010s were: 45.2% third-degree AV block; 29.7% SND; and 15.7% first- and second-degree AV block among the 106,884 patients receiving a PPI for the first time.[23]

One of this study's limitations is its cross-sectional design, which was chosen because there were no studies addressing the population cared for by the hospital where this study was conducted. For this reason, we decided to first diagnose the situation and later perform longitudinal studies to assess the impact of PPI by addressing patients before and after the implantation. Assessing a subjective construct such as HRQoL using scales may hinder an intuitive understanding of this measure, so that qualitative studies may be conducted in order to explore this construct.

These limitations, however, did not prevent us from identifying that patients with PPI scored worse in physical domains than in mental domains. Therefore, these results can support decision-making concerning treatments and their effectiveness as an additional measure to already existing conventional treatment. Additionally, even though patients in general rated mental domains best, the Emotional Problems domain was one of the domains that was worst rated, suggesting that some emotional aspects interfered in their regular daily tasks. This result strengthens the importance of performing holistic assessments of patients with PPI, because follow-up consultations currently focus on the device functioning, while emotional aspects are disregarded. This study's results can support the planning of further research, including longitudinal studies assessing patients with PPI at different

points of their clinical trajectory, as well as studies with interventions intended to improve the quality of life of this population.

Artificial pacing of the heart benefits the health of patients with severe heart diseases because it prolongs life and improves symptoms. Thus, assessing these patients' HRQoL is essential to diagnosing the health dimensions most severely affected in this population.

CONCLUSION

In the SF-36, patients with PPI obtained better HRQoL scores in the Social Functioning and Emotional Well-Being domains, while Physical Health and Physical Functioning obtained the worst scores. In the assessment via the AQUAREL, patients scored better in the Arrhythmia domain and worse scores were obtained in the Dyspnea domain.

REFERENCES

1. Oliveira DVR, Ayoub AC, Kobayashi RM, Simonetti SH. Marca-passo: competências clínicas para enfermeiros. Rio de Janeiro, RJ(BR): Atheneu; 2017.

2. Assumpção AC, Galvão Filho SS, Melo CS, Campos Neto CM, Poncio VA, Totora APF. Algumas observações sobre a estimulação cardíaca no Brasil entre 2000 e 2014: 25 anos do RBM – Registro Brasileiro de Marca-passos, Desfibriladores e Ressincronizadores Cardíacos. Relampa. 2016;29(1):3-11.

3. Barros RT, Carvalho SM, Silva MA, Borges JB. Evaluation of patients' quality of life aspects after cardiac pacemaker implantation. Rev Bras Cir Cardiovasc [Internet]. 2014 [cited 2018 Apr 7]; 9(1):37-44. Available from: https://dx.doi.org/10.5935/1678-9741.20140009

4. Borges JBC, Barros RT, Carvalho SMR, Silva MAM. Correlation between quality of life, functional class and age in patients with cardiac pacemaker. Rev Bras Cir Cardiovasc [Internet]. 2013 [cited 2018 Jul 6];28(1):47-53. Available from: https://dx.doi.org/10.5935/1678-9741.20130008

5. Gomes TB, Gomes LS, Antônio IHF, Barroso TL, Cavalcante AMRZ, Stival MM, et al. Avaliação da qualidade de vida pós-implante de marca-passo cardíaco artificial. Rev Eletr Enf [Internet]. 2011 [cited 2018 Jul 6];13(4):735-42. Available from: https://dx.doi.org/10.5216/ree.v13i4.12697

6. Fleischmann KE, Orav EJ, Lamas GA, Mangione CM, Schron E, Lee KL et al. Pacemaker implantation and quality of life in the Mode Selection Trial (MOST). Heart Rhythm [Internet]. 2006 [cited 2018 Jul 6];3(6):653-9. Available from: https://dx.doi.org/10.1016/j.hrthm.2006.02.1031

7. Młynarski R, Włodyka A, Kargul W. Changes in the mental and physical components of the quality of life for patients six months after pacemaker implantation. Cardiol J. 2009; 6(3):250-3.

8. Udo EO, van Hemel NM, Zuithoff NP, Nijboer H, Taks W, Doevendans PA, et al. Long term quality-of-life in patients with bradycardia pacemaker implantation. Int J Cardiol [Internet]. 2013 [cited 2018 Jul 6];168(3):2159-63. Available from: https://dx.doi.org/10.1016/j.ijcard.2013.01.253

9. Neves RRS; Silva IC. A qualidade de vida de pacientes com marcapasso. Anais SIMPAC, 2016;8(1):50-4.

10. Oliveira MSS, Silva GT, Santana, MDR. A qualidade de vida de pacientes com marcapasso cardíaco. Rev E-Ciênc [Internet], 2016 [cited 2019 Jun 17];4:82-8. Available from: https://dx.doi.org/10.19095/rec.v4i1.151

11. Pfeiffer E. A Short Portable Mental Status Questionnaire for the Assessment of Organic Brain Deficit in Elderly Patients. J Am Geriatr Soc [Internet]. 1975 [cited 2018 Jul 6];23(10):433-41. Available from: https://dx.doi.org/10.1111/j.1532-5415.1975.tb00927.x

12. Nepomuceno E, Silva LN, Cunha DCP, Furuya RK, Simões MV, Dantas RAS. Comparação de instrumentos para avaliar fadiga em pacientes com insuficiência cardíaca. Rev. Bras. Enferm. [Internet]. 2018 Oct [cited 2019 Nov 20];71(5): 2404-10. Available from: https://dx.doi.org/10.1590/0034-7167-2017-0083.

13. Ware JE, Sherbourne CD. The MOS 36-item short-form health survey (SF-36). I. conceptual framework and item selection. Med Care. 1992;30(6):473-83.

14. Ciconelli RM, Ferraz MB, Santos W, Meinão I, Quaresma MR. Tradução para a língua portuguesa e validação do questionário genérico de avaliação de qualidade de vida SF-36 (Brasil SF-36). Rev Bras Reumatol. 1999;39:143-50.

15. Stofmeel MA, Post MW, Kelder JC, Grobbee DE, van Hemel NM. Psychometric properties of Aquarel. A disease-specific quality of life questionnaire for pacemaker patients. J Clin Epidemiol [Internet]. 2001 [cited 2018 Jul 6];54(2):157-65. Available from: https://dx.doi.org/10.1016/s0895-4356(00)00275-4

16. Oliveira BG, Melendez JGV, Ciconelli RM, Rincón LG, Torres AAS, Sousa LAP et al. The Portuguese Version, Cross-Cultural Adaptation and Validation of Specific Quality-of-Life Questionnaire - AQUAREL - for Pacemaker Patients. Arq Bras Cardiol [Internet]. 2006 [cited 2018 Jul 06];87(2):75-83. Available from: https://dx.doi.org/10.1590/S0066-782X2006001500003

17. Echevarría-Guanilo ME, Gonçalves N, Romanoski PJ. Psychometric properties of measurement instruments: conceptual bases and evaluation methods - Part I. Texto Contexto Enferm [Internet]. 2017 [cited 2018 Nov 15];26(4):e1600017. Available from: https://dx.doi.org/10.1590/0104-07072017001600017

18. Zatta LT. Avaliação da qualidade de vida de portadores de marcapasso cardíaco artificial em Goiânia, Goiás. [master's thesis]. [Goiânia, GO(BR)]: Universidade Federal de Goiás, Faculdade de Enfermagem; 2010. 123 p.

19. Kurucová R, Žiaková K, Gurková E, Šimková E. Quality of life of patients with a permanent pacemaker. Central Europ J Nurs Midwifery, 2014;5(1):15-20.

20. Laguardia J, Campos MR, Travassos C, Najar AL, Anjos LA, Vasconcellos MM. Brazilian normative data for the Short Form 36 questionnaire, version 2. Rev Bras Epidemiol [Internet]. 2013 [cited 2018 Jul 6];16(4):889-97. Available from: https://dx.doi.org/10.1590/S1415-790X2013000400009

21. Comoretto RI, Facchin D, Ghidina M, Proclemer A, Gregori D. Remote controlimproves quality of life in elderly pacemaker patients versus standard ambulatory-based follow-up. J Eval Clin Pract. [internet], 2017 [cited 2019 Jun 16];23(4):681-9. Available from: https://dx.doi.org/10.1111/jep.12691

22. Cunha TMB, Cota RMA, Souza BK, Oliveira BG, Ribeiro ALP, Sousa LAP. Correlation between functional class and quality of life among cardiac pacemaker users. Rev Bras Fisioter [Internet]. 2007 [cited 2018 Jul 06];11(5):341-5. Available from: https://dx.doi.org/10.1590/S1413-35552007000500003

23. Pachón-Mateos JC, Pereira WL, Batista Junior WD, Pachón Mateos JC, Pachón Mateo EI, Vargas RNA, et al. RBM - Registro Brasileiro de Marcapassos, Ressincronizadores e Desfibriladores. Relampa. 2013;26(1):39-49.

NOTES

ORIGIN OF THE ARTICLE
Article extracted from the thesis - Avaliação da qualidade de vida relacionada à saúde de pacientes portadores de marca-passo, presented to the *Programa de Pós-Graduação Enfermagem Fundamental, Escola de Enfermagem de Ribeirão Preto, Universidade de São Paulo*, in 2018.

CONTRIBUTION OF AUTHORITY
Study design: Gonçalo SS, Grotti EMO, Furuia RK, Dantas RAS, Rossi LA, Dessotte CAM.
Data collect: Gonçalo SS, Grotti EMO, Furuia RK, Dantas RAS, Rossi LA, Dessotte CAM.
Data analysis and interpretation: Gonçalo SS, Grotti EMO, Furuia RK, Dantas RAS, Rossi LA, Dessotte CAM.
Discussion of the results: Gonçalo SS, Grotti EMO, Furuia RK, Dantas RAS, Rossi LA, Dessotte CAM.
Writing and / or critical review of content: Gonçalo SS, Grotti EMO, Furuia RK, Dantas RAS, Rossi LA, Dessotte CAM.
Review and final approval of the final version: Gonçalo SS, Grotti EMO, Furuia RK, Dantas RAS, Rossi LA, Dessotte CAM.

APPROVAL OF ETHICS COMMITTEE IN RESEARCH
Approved by the Ethics Committee in Research with Human Beings of the *Escola de Enfermagem de Ribeirão Preto da Universidade de São Paulo*, n. 1.267.526/2015, Certificate of Presentation for Ethical Appreciation 49315415.5.0000.5393.

CONFLICT OF INTEREST
There is no conflict of interest.

HISTORICAL
Received: December 20, 2018.
Approved: July 11, 2019.

CORRESPONDING AUTHOR
Carina Aparecida Marosti Dessotte
camarosti@usp.br.