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RESEARCH

Comprehension of the education handout and health literacy of pacemaker users

Legibilidade de prospecto facilitador e letramento em saúde de indivíduos com marcapasso

Comprensibilidad de prospecto de facilitación e instrucción en salud de individuos con marcapasos

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ABSTRACT

Objective: To verify the comprehension of the education handout and the level of Functional Health Literacy of individuals with cardiac pacemaker (PM) and whether there is correlation between the comprehension and Functional Health Literacy (FHL). **Method:** Cross-sectional study with 63 individuals with PM who answered to comprehension tests of the handout, literacy assessment (SAHLPA-50) and cognition (MMSE). Measurements of dispersion, Pearson correlation and multiple linear regression were calculated. **Results:** Most women, study time ≤ 9 years, 66.21 (average age) presented no cognitive changes. An adequate literacy level was evidenced in 50.8% individuals with PM and satisfactory comprehension of the handout. No correlation was identified between FHL, handout comprehension, age, years of study and cognition. **Conclusion:** The handout comprehension assessed by individuals with appropriate FHL indicated that it can be a printed material suitable for use, aiming to improve care process and knowledge of individuals with PM. **Descriptors:** Health Literacy; Artificial Cardiac Pacemaker; Health Education; Patient Education Handout.

RESUMO

Objetivo: Verificar a legibilidade de prospecto facilitador da aprendizagem e o nível de Letramento Funcional em Saúde de indivíduos com marcapasso cardíaco (MP) e se há correlação entre a legibilidade e Letramento Funcional em Saúde (LFS). **Método:** Estudo transversal com 63 indivíduos com MP, que responderam testes de legibilidade do prospecto, de avaliação do letramento (SAHLPA-50) e cognição (MEEM). Foram calculadas medidas de dispersão, correlação de Pearson e regressão linear múltipla. **Resultados:** Maioria mulheres, tempo de estudo ≤ 9 anos, idade média de 66,21 anos, sem alteração cognitiva. Evidenciado nível adequado de letramento em 50,8% dos indivíduos com MP e legibilidade satisfatória do prospecto. Não foi identificada correlação entre LFS, legibilidade do prospecto, idade, anos de estudo e cognição. **Conclusão:** A legibilidade do prospecto avaliada por indivíduos com adequado LFS indicou que pode ser um impresso educativo apropriado para uso, visando aprimorar o processo de cuidar e o conhecimento dos indivíduos com MP.
Descritores: Alfabetização em Saúde; Marca-Passo Cardíaco Artificial; Educação em Saúde; Prospecto para Educação de Pacientes Enfermagem.

RESUMEN

Objetivo: Verificar la comprensibilidad de prospecto de facilitación del aprendizaje y nivel de Instrucción Funcional en Salud de individuos con marcapasos cardíaco (MP), y la existencia de correlación entre comprensibilidad e Instrucción Funcional en Salud (IFS). **Método**: Estudio transversal, con 63 individuos con MP, que respondieron testes de comprensibilidad del prospecto, de evaluación de instrucción (SAHLPA-50) y cognición (MEEM). Se calcularon medidas de dispersión, correlación de Pearson y regresión lineal múltiple. **Resultados**: Mayoría de mujeres, escolarización ≤ 9 años, media etaria de 66,21 años, sin alteraciones cognitivas. Evidenciado nivel adecuado de instrucción en 50,8% de individuos con MP y comprensibilidad satisfactoria del prospecto. No se identificó correlación entre IFS, comprensibilidad del prospecto, escolarización y cognición.

Conclusión: La comprensibilidad del prospecto evaluada por individuos con IFS adecuada indicó que resulta potencial impreso educativo utilizable, en pos de mejorar el proceso de cuidar y el conocimiento de los individuos con MP.
Descriptores: Alfabetización en Salud; Marcapaso Cardíaco Artificial; Educación en Salud; Folleto Informativo para Pacientes; Enfermería.

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INTRODUCTION

Thousands of new heart pacemaker implants (PM) occur each year in the world; in 2015, new 13.777 implants were performed in Brazil[1]. Individuals with a definitive artificial cardiac pacemaker needs to be informed about the treatment, as well as on possible interferences in their daily lives, avoiding knowledge gaps that may cause unnecessary changes in their daily lives[2].

Patients with definitive PM require specific care and guidelines during the new lifestyle acceptance and adaptation. Therefore, a nurse plays a key role in this process, for being one of the professionals who are in continuous contact with individuals with PM, working as a health educator, in order to give the necessary guidelines, enable them for self-care and to face difficulties in short and long term, aiming at independence, autonomy and improvement of the patient's quality of life (QoL)[3-4].

Thus, care excellence is directly related to the individual's ability to access appropriate health information in the right moment and use them for assertive decision making in health[2,5]. Currently, from the approach made by professionals during appointments, several different means are being used to guide patients/families/caregivers, such as workshops, lectures, group dynamics and printed materials, among others[4,6)6].

Printed educational materials to mediate communication among healthcare professionals, patients and their families are intended to inform and the strengthen guidelines spoken in appointments, as well as to facilitate self-care. It is a ready available resource for doubts that come later, when they are far from professionals[2,7-8].

Its use by individuals with PM can minimize limitations in daily life activities related to cultural representations of cardiac prosthesis use, lack of knowledge or myths created by the population, especially those concerning interference in the device functioning[2].

However, information is often presented in a complex way, with medical terminology or formal language that compromise understanding [9-11] and, consequently, quality of care as well. In this case, the reach of the handout's educational objective produced will be limited or none, and thus is necessary to assess the comprehension of printed educational materials. This comprehension involves the language used and also aspects related to layout, design, and figures/illustrations[12-14].

The comprehension of texts can be higher than users' reading ability. Therefore, in addition to aspects related to quality of educational materials, reading and writing skills of those who will receive this information must be considered, that is, Functional Health Literacy of these people must be known[10].

Functional Health Literacy (FHL) is defined as the "ability degree that an individual has to obtain, process and understand basic health information and health services necessary for appropriate health decisions"[15], that is, educational background does not guarantee information understanding[10,16].

A low level of FHL has been the biggest obstacle to effective understanding of information about the disease and its treatment, which would make possible the appropriate decision-making process in health[14,16-18]. There is strong evidence that low health literacy leads to less healthy choices, higher-risk behaviors, more hospitalizations and higher health cost, in developed and developing countries, and influences the oral communication of health professionals[16].

The use of education handouts (understandable and consistent with the FHL level) is an important care tool for clinical practice[19]. Moraes et al.[7] have developed and validated a content for an education handout for individuals with PM, which includes groups of guidelines related to pacemaker functioning, pre/post-operative guidelines, possible interferences in the generator and frequent asked questions about interference in the generator[20].

However, for effective use of educational materials, observing information content is not enough[10,13]; carrying out comprehension assessment of this handout is essential and, in addition, identifying the FHL level of individuals with PM[16]. Therefore, this study aimed to verify the understanding of an education handout and the Functional Health Literacy level of individuals with PM, as well as whether there is correlation between understanding and FHL.

METHOD

Ethical aspects

This study is part to the project "Quality of Life and Guidelines to the Definitive Pacemaker Carrier," approved by the Research Ethics Committee, with addendum approved in 2014. A permission to use the SAHLPA-50 questionnaire was requested to the Brazilian version's authors[18]. Individuals who had pacemaker implant were invited to participate in the study and requested to sign the informed consent form (ICF) before the application of questionnaires.

Design, study location and period

Cross-sectional study carried out between April and June 2015, in a private clinic and in a cardiology outpatient clinic of a large teaching hospital of Goiânia, Goiás, Brazil, that assists the population referenced by the Unified Health System.

Population or sample; inclusion and exclusion criteria

This study had 63 participants with more than 18 years of age, who were able to understand the study objectives and verbally answer questions; literate and with a score > 10 points in the mental state examination. Nine individuals were illiterate and 52 refused to participate in the study.

The participants were asked to participate in the research on the waiting rooms of the selected locations and answer the selected questionnaires for sociodemographic characterization, cognitive function assessment (Mini Mental State Examination – MMSE), assessment of the Functional Health Literacy conditions (Short Assessment of Health Literacy for Portuguese Speaking Adults-SAHLPA-50) and to assess comprehension of the education handout. The application of questionnaires lasted 15 minutes on average.

For the demographic characterization of the individuals, the variables age, sex, educational background, marital status and labor activity were used. Educational background was stratified according to the reformulated National Education Guidelines and Framework Law (*Lei de Diretrizes e Bases da Educação* – LDB)[21], which establishes nine years for primary education.

The Cognitive function assessment of participants by MMSE application is recommended for a better interpretation of FHL tests[22]. The global score is obtained by the sum of items with a 30-point maximum. Reading of results found by the sum varies according to the score: lower than 24 points suggests *cognitive impairment*; between 23 and 21 points, *mild impairment*; between 20 and 11 points, *moderate impairment*; and lower than 10 points, *serious impairment*[23].

Level measurement of Functional Health Literacy was carried out through the questionnaire Short Assessment of Health Literacy for Portuguese Speaking Adults (SAHLPA-50), Brazilian version[18]. SAHLPA-50 has 50 items that assess ability of individuals to pronounce and understand medical terms commonly used. The questionnaire score is obtained by summing items properly pronounced and associated. Each correct item receives a point. The Health Functional Literacy level is stratified in *Unsuitable* when has scores between 0–42 points, and *Suitable* for scores higher than 42 points. The SAHLPA-50 application followed instructions recommended by the authors[18,24].

The education handout directed to individuals with PM [20] contains 32 items grouped into: pacemaker functioning (what it is, how it works, generator duration); preoperative guidelines (hospitalization period, fasting, surgical time, type of anesthesia, surgical technique, use of medicines, trichotomy); postoperative guidelines (bandage, medical follow-up, diet after implant, care with the generator "shop", physical activity, sexual activity, retirement, return to work, daily life activities); possible interferences on the generator (metal detector, cell phone; magnetic mattress, electric shock) and frequent doubts (bus turnstile; use of wireless phone and microwave oven).

The handout understanding assessment was performed through a tool proposed by the European directive that evaluates the reader's satisfaction regarding the information material through a Likert type scale (1 – I completely disagree to 5 – I completely agree, and 3 – neutral position). Originally, the tool assesses 16 items considered essential for the elaboration of accessible and legible informational materials[25]. In this study, we assessed only 11 out of the 16 criteria since the other items are not relevant to the assessed material. Not assessing these five items does not generate any bias in the results obtained. Once there is not a comprehension score, criteria are independent of each other. The criteria used were:

- font size;
- font type;
- presentation of section titles;
- text printing color;
- language simplicity;
- size of phrases;
- size of paragraphs;
- simplicity of medical terms;
- paper color used;
- paper brightness used;
- paper thickness used.

For the understanding assessment, the handout was given to the participants, who after reading the material, analyzed it regarding agreement with the criteria of the European Commission[25].

Results analysis and statistics

Sociodemographic and clinical characteristics, as well as MMSE and SAHLPA-50 scores, were presented by mean, standard deviation and minimum and maximum values. Functional Health Literacy level was stratified according to the accuracy percentage and followed the proposition of the authors of the original tool[26].

Following the European Commission[25] guidelines for comprehension analysis, agreeing with each of the handout items is considered satisfactory when indicated by 90% of the participants. To dichotomize answers and enable statistical analysis, answers "I agree partially" and "I completely agree" together were considered *agreement*; regarding *disagreement*, the other parameters were connected ("I completely disagree," "I partially disagree" and "I do not agree nor disagree").

Pearson correlation among SHALPA-50; years of education; MMSE; and age. Absolute frequencies and percentages for each variable of comprehension were also calculated. Multiple linear regression was also performed to identify possible associations between Functional Health Literacy and the comprehension items. For all the analyses, p value < 0.05 was considered statistically significant.

RESULTS

The age mean of individuals with MP was 66.21 $\pm$ 12.1 (minimum = 39 and maximum = 86), and 10 of them were aged $\geq$ 80 and the rest were between 70 and 79. Most were female, retired, married or widow, with education time $\leq$ 9 years, as described in Table 1.

The tracking mean score of cognitive and mental function was 27.14 $\pm$ 2.19 points (minimum = 30 and 19 maximum = 19). Most (92.1%) of the patients interviewed did not provide any cognitive change ($\geq$ 24 points) and the others (7.9%) obtained score $<$ 24 points, which suggests moderate or slight cognitive decline.

SAHLPA-50 mean score was 42.03 $\pm$ 2.87 points (minimum = 37 and maximum = 47). About half (50.8%) of individuals with PM presented a *suitable* level of Functional Health Literacy (score $>$ 42 points).

Significant correlation between the score of the Functional Health Literacy test (SAHLPA-50) and the variables age, years of education and MMSE score were not identified (table 2).

Table 1 – Sociodemographic characteristics of 63 individuals with definitive artificial cardiac pacemaker, Goiânia, Goiás, Brazil, 2015

Characteristics	n	%
Age (years)		
≥ 60	43	68.2
< 60	20	31.7
Sex		
Female	33	52.4
Male	30	47.6
Education time		
≤ 9 years	40	63.5
> 9 years	23	36.5
Retired		
Yes	50	79.4
No	13	20.6
Marital status		
Married	39	62.0
Widower	16	25.4
Single	4	6.3
Divorced	4	6.3

Table 2 – Correlation between the SAHLPA-50 scores, age, years of education and the Mini Mental State Examination (MMSE) of 63 individuals with definitive artificial cardiac pacemaker, Goiânia, Goiás, Brazil, 2015

Variables	SAHLPA-50 score (r)	*p* value
Age (years)	0.208	0.101
Years of education	0.211	0.095
MMSE score	0.193	0.129

Note: r – Pearson correlation coefficient; MMSE – Mini Mental State Examination

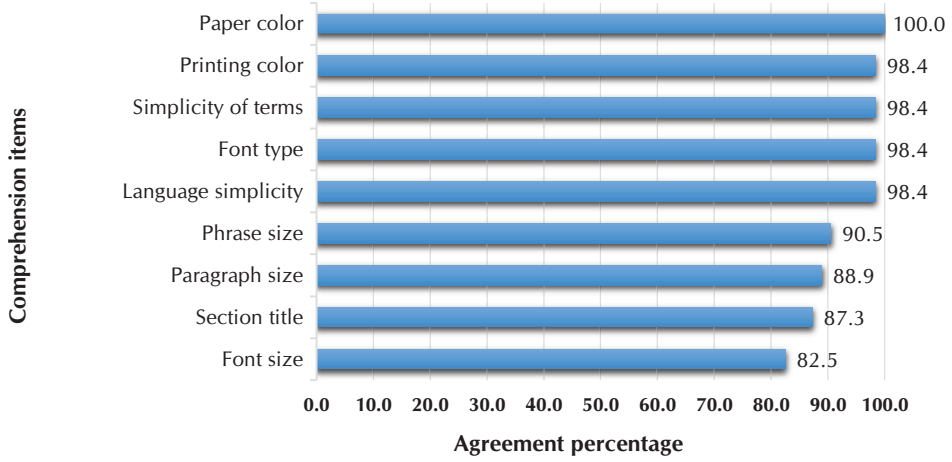

Figure 1 – Satisfaction (agreement) of 63 individuals with pacemaker, with comprehension items of a education handout, Goiânia, Goiás, Brazil, 2015

Table 3 – Influence of sex, age and years of study on the Functional Health Literacy level of 63 individuals with artificial cardiac pacemaker, Goiânia, Goiás, Brazil, 2015

Variables (N = 63)	SAHLPA – 50 ≤ 42 points		SAHLPA – 50 > 42 points		*p* value
	n	f(%)	n	f(%)	
Sex					
Female (n = 33)	13	39.4	20	60.6	0.167
Male (n = 30)	18	60.0	12	40.0	
Age					
< 60 (n = 20)	12	60.0	08	40.0	0.3692
≥ 60 (n = 43)	19	44.2	24	55.8	
Years of education					
≤ 9 (n = 40)	23	57.5	17	42.5	0.1403
> 9 (n = 23)	08	34.8	15	65.2	

Note: f – frequency

We found no difference among strata of the variables sex, age and years of education, when considering Functional Health Literacy levels (unsuitable ≤ 42 points and suitable > 42 points), presented in Table 3.

Agreement assessment of individuals with PM with items of the education handout (Figure 1) revealed that three items did not reach 90% agreement, namely, paragraph size (88.9%), sections titles (87.3%) and font size (82.5%).

The multiple regression did not identify correlation between the Functional Health Literacy score and understanding the education handout items.

DISCUSSION

The demographic panorama of the interviewed individuals with PM is a direct reflection of the demographic transition process, Brazilian population aging and consequently higher chances of cardiovascular diseases, greater need for health services and, consequently, more and more longevity and search for quality of life[27], which means an increase of years of life[28].

In addition, the impossibility to carry out labor activity is something that has been concerning individuals who uses PM and affecting their quality of life [9], as they are often retired due to disability, although still young. We must remember that work is not just something that generates income, but also an activity that allows human beings to feel useful and brings functionality to the environment where they live in[29].

Literacy test results showed that about half of individuals with PM has suitable FHL; and although education was not predictive of FHL best levels, as already evidenced by another study, [18]something must be pointed out: nobody is completely "health literate." Even people with several years of education may, at some point, need help to understand or act after receiving health information, especially if they feel vulnerable due to a disease[16].

Despite association between education and FHL levels was not identified, low education is predictive of worse health outcomes when associated with advanced age[5]. This observation is pertinent if we consider that the mean age of the study members was 66.21 ± 12.1 years, while the national mean in 2015 was 71 ± 15.24 years[1]. In general, older adults use health services more often and are inclined to more frequent and complex therapeutic procedures[18].

The other individuals with PM who did not present proper FHL require more attention from professionals, but we must remember that people's needs change over time to the extent they experience health-related challenges. Functional Health Literacy is not an invariable condition; therefore, this is a health determinant that needs to be explored in health practices.

Preservation of cognitive capability and FHL appropriate level of participants were positive aspects identified in the study, since it indicates they had ability to analyze if the education handout was understandable, which was the main concern at beginning of the research. This should be a frequent concern when elaborating any printed educational material[13].

Despite the satisfactory result of the comprehension analysis – which followed international recommendations[25] –, the goal is to reach 100%. Items with a lower satisfaction degree (section titles, font and paragraph size) were rewritten, according to suggestions of the participants, in order to achieve quality in the available material.

Information provided must reach effective communication between those involved in care. "to transform the language used in the provided information, making them accessible to all society, regardless of people's education level" is necessary[30].

Study limitations

It must be said that the number of participants may have influenced the non-association between FHL and comprehension of the educational material. For being one of the first studies to consider this association, the comparison of the results obtained with the literature was limited.

Contributions to nursing and health fields or public policies

The inclusion of comprehension assessment of the education handout used as educational materials and FHL examination in the target population in health services will guarantee greater validity and reach of information contained in educational materials available to the population, as will ensure that such information will be stimulate changes in health behavior and quality of life.

CONCLUSION

Quality information can stimulate active participation of individuals with PM in their own care and health decision making. Results obtained confirm the need of nursing professionals to pay attention to the understanding of printed educational material they use as an educational tool, because groups change and skills for Functional Health Literacy may change over time as well, reinforcing the need for periodic assessments of handouts used.

Individuals with artificial cardiac PM without cognitive change and with suitable Functional Heath Literacy approved the most part of the education handout items, indicating that it can be considered an educational tool, with great potential to improve care process and knowledge of individuals with MP.

Unsuitable literacy is not an individual problem, but a society problem. Some actions can improve it by seeking user skills improvement to access information, health services and effective communication with the health team. True care requires constant monitoring of outcomes of the actions proposed, adjustments and continuous reassessment, to meet the needs of users and be able to effectively influence on health outcomes.

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