Patients' knowledge on oral anticoagulation after metal valve implantation

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ABSTRACT

Aim: evaluate the knowledge on oral anticoagulation of patients after their first heart surgery with metallic valve implantation. **Method:** This is a cross-sectional descriptive study with a quantitative approach, in which 32 patients aged over 18 years who underwent implantation of metallic heart prostheses in a teaching hospital were interviewed. Data collection occurred between January 2019 and March 2020, by means of an interview contemplating an instrument to assess knowledge on oral anticoagulant, whose minimum expected score is zero and maximum is 32 points, with higher scores indicating greater knowledge. Patients who did not present cognitive conditions were excluded. **Results:** the majority of females lived with a partner and was in an inactive work situation, with a mean age of 49.9 years. The mean score of general knowledge was 19.8 points, far from the values that indicate greater knowledge. The average score for specific knowledge was 3.0 points, which shows greater knowledge. **Conclusion:** A deficit was observed in the knowledge regarding the coagulation control test and the procedures to discontinue the use of anticoagulants, which reinforces the need for careful monitoring and patient orientation during treatment.

Descriptors: Perioperative Nursing; Knowledge; Anticoagulants; Cardiac Surgical Procedures; Heart Valve Prosthesis Implantation.

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INTRODUCTION —————

In Brazil, valve diseases represent a significant portion of hospitalizations due to cardiovascular diseases [1]. In most cases, the hospitalizations reveal a marked valve impairment, since the clinical manifestations occur late, due to the characteristic asymptomatic period at the beginning of the disease [2].

Currently, there are several forms of treatment for valve diseases, including surgical correction [2]. From the indication of surgery for heart valve replacement, the choice is between biological or metallic prosthesis. There is no ideal substitute for each necessity of valve replacement; however, there is a low risk of thromboembolic events and bleeding in the use of biological prosthesis; nevertheless, its durability is short. On the other hand, the metallic prosthesis has greater durability, but with greater risk of hemorrhagic or thromboembolic events [3].

Patients with metallic heart prostheses require antithrombotic prevention [4] with the use of oral anticoagulants (OAC), with vitamin K antagonists being the most widely used [5]; however, the main complication is bleeding, whose determinants are the intensity and duration of anticoagulation, the use of concomitant medications, foods rich in vitamin K and patient characteristics [6].

At hospital discharge, patients submitted to heart valve prosthesis implantation are generally instructed to make continuous use of Oral Anticoagulants (OAC) antagonist of vitamin K. Given the complexity of adverse reactions and the need to verify how adequate the orientation received regarding drug therapy after discharge is, the knowledge on the action and complications inherent to this therapy by these patients is necessary. Furthermore, in the Brazilian scenario, the cardiac habilitation process, through outpatient follow-up, is restricted to a few hospital institutions.

After literature review, it was verified that there are few studies developed aimed to assess the knowledge of these patients on OAC [7-8] after discharge; however, the evaluations occurred through instruments submitted only to face validation. The studies [7-8] showed knowledge regarding the use of oral anticoagulants; nonetheless, they do not provide information on the internal structure validity of the instruments, which prevented us from classifying the knowledge as

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adequate or inadequate based on the scores. However, the studies [7-8] revealed the need to implement the knowledge of patients on the anticoagulation control test, aspects related to the importance of the uninterrupted use of medication and maintenance of a balanced diet, consistent with the effects of anticoagulants.

The findings justify this investigation, since patients submitted to metallic valve prosthesis implantation need orientation regarding the medication in question, its continuous use, and the repercussions related to coagulation control, which may favor the implementation of nursing care at the time of discharge and during outpatient follow-up. Given the above, the present study aimed to evaluate the knowledge on oral anticoagulation of patients after their first heart surgery with metallic valve implantation.

METHOD

This is a descriptive cross-sectional study using a quantitative approach, carried out at an Oral Anticoagulation Therapy (OAT) service, which performs outpatient follow-up on patients (checking the International Normalized Ratio - INR values and scheduling return visits) through an institutional protocol coordinated by nurses and physicians from a university hospital located in the city of Ribeirão Preto, São Paulo (SP).

It was not possible to perform a sample size calculation, because the variance of the response variables and using the same instrument to reveal the construct in question is not available in the literature. Thus, a consecutive, non-probabilistic sample was composed of patients who met the inclusion criteria: both sexes, aged over 18 years, regardless of social class and race, who had previously undergone the first surgery for correction of valve disease, with implantation of a metallic prosthesis. Patients who did not present cognitive conditions were excluded. To identify patients who are cognitively able to answer the subsequent interview questions, six questions were used: "What is today's date?", "What is your age?", "On what day of the week are we?", "What is the name of the place we are at this moment?"; "What is your full name?", and "What is the name of the city where you were born?" Participants were excluded from the study if they got three or more questions

Wrong or were unable to answer them [9-10].

Data collection was carried out on the date of the outpatient return for OAT follow-up and control through individual interviews and consultation of the participants' medical records using an instrument containing sociodemographic and clinical variables: dates of hospitalization, interview, and birth; sex; marital status; education, and professional status; family monthly income; main diagnosis; comorbidities; lifestyle habits (current or past smoking); date of surgery, surgery performed; date of initiation of OAT and name of the OAC used in the immediate postoperative period (PO). The patient was asked whether he received orientation on the OAT; if so, which professional provided the orientation?

To evaluate the patient's knowledge about oral anticoagulation, we used the "Instrument for the evaluation of oral anticoagulant knowledge (*Instrumento de avaliação do conhecimento sobre anticoagulante oral* – IACACO)", constructed and validated by Brazilian researchers [11]. It is an instrument composed of 32 questions, divided into two modules: the general module for men and women; and the specific module only for women of childbearing age. In both modules, each correct question is equivalent to one point, and incorrect questions are not scored; thus, the minimum expected score is zero and the maximum is 32 points, with higher scores indicating greater knowledge about the OAT. The instrument in question has evidence of content validity, construct validity, and reliability. The authors of the instrument did not investigate the evidence of criterion validity, which does not allow parameterizing the levels of knowledge. The items of the IACACO were corrected as right or wrong, according to the template provided by the authors of the instrument [11].

The data were entered into the Office Excel 2010 program with the technique of double entry of the responses obtained and subsequent verification. After validation, the data were transferred to IBM-SPSS, version 24.0 for Windows (SPSS, Inc., Chicago, IL, USA). Descriptive analyses of simple frequency were performed for nominal or categorical variables, and of central tendency (mean) and dispersion (standard deviation (SD)) for continuous variables.

Data were collected after approval by

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the Research Ethics Committee of the Ribeirão Preto School of Nursing of the University of São Paulo, under number 2,972,451, and the signature of the Informed Consent Form (ICF) by the participants who agreed to participate in the study.

RESULTS

Sample consisted of 32 patients who were being followed at the outpatient clinic of the aforementioned institution and data collection occurred between January 2019 and March 2020. The sociodemographic characterization of the sample is shown in table 1, and table 2 shows the clinical characterization of the participants.

Most of the patients who underwent valve replacement surgery were female, lived with a partner, and had an inactive employment status at the time of the interview. Low education and low monthly family income were also found. The mean age of the interviewed patients was 49.9 years (SD=10.7).

It is observed that in the sample the mitral valve was the most affected, followed by the aortic valve. The most frequent valve disease was valve insufficiency, followed by double injury, insufficiency, and stenosis. It is also noted that most patients had Systemic Arterial Hypertension, and a large part had Atrial Fibrillation.

Regarding the surgery performed and the valve replacement position, 17 patients (53.1%) underwent mitral valve replacement, nine (28.1%) underwent aortic valve replacement, and six (18.8%) underwent mitral and aortic valve replacement.

Table 3 shows the distribution of the frequency of correct answers for the items of the OAC knowledge instrument. The mean time of use of OAC was 44.78 months (SD=43.7) and the median was 26 months.

Regarding the score of general knowledge on the use of OAC, we observed a mean of 19.8 (SD=4.1) correct answers, with a median of 20.5. The range obtained was 12 to 26. As for the score of specific knowledge of women who are still at childbearing age (n=8), a mean of 3.0 (SD=1.0) was observed, with median = 3, and the range

was 1 to 4. The questions were presented in table 3, obeying the sequential order proposed by the authors, who validated the instrument.

Table 1- Sociodemographic characterization of participants (n = 32). Ribeirão Preto, SP, Brazil 2019-2020

Variables	Mean (SD)*	n (%)
Sex		
Female		17 (53.1)
Male		15 (46.9)
Living with a partner		
Yes		23 (71.9)
No		9 (28.1)
Professional status		
Inactive		27 (84.4)
Active		5 (15.6)
Age	49,9 (10.7)	
Education (complete years)	6.4 (3.5)	
Monthly Income (in reais)	1480.3 (831.3)**	

Table 2 - Clinical characterization of participants (n = 32). Ribeirão Preto, SP, Brazil 2019-2020.

Variable	n (%)
Valve affected	
Mitral	16 (50.0)
Aortic	10 (31.3)
Mitral + Aortic	4 (12.5)
Tricuspid	1 (3.1)
Mitral + Tricuspid	1 (3.1)
Valvular disease	
Insufficiency	11 (34.4)
Insufficiency+ Stenosis	10 (31.2)
Stenosis	7 (21.9)
Diagnosis unknown	4 (12.5)
Comorbidities	
Systemic Arterial Hypertension	17 (53.1)
Atrial Fibrillation	12 (37.5)
Diabetes Mellitus	7 (21.9)
Flutter	7 (21.9)
Dyslipidemia	7 (21.9)
Heart Failure	6 (18.8)
Smoking	
Past	11 (34.4)
Current	5 (15.6)

Table 3 - Distribution of hit frequencies of the items of the responses of the "Instrument for assessing knowledge on oral anticoagulant (IACACO)" of the participants. Ribeirão Preto, SP, Brazil 2019-2020

Instrument to assess knowledge on oral anticoagulants (n=32)	Correct answers n (%)
13. Which of the following foods can alter the effect of oral anticoagulants?	31 (96.9)
1. Which of the following drugs is your oral anticoagulant?	30 (93.8)
2. In your case, what was the indication for the use of oral anticoagulant?	30 (93.8)
16. What foods below have you been told to avoid or not consume in excess because of the oral anticoagulant?	30 (93.8)
4. How long will you use the oral anticoagulant?	29 (90.6)
5. Do you know when you can stop taking oral anticoagulants?	29 (90.6)
12. While taking oral anticoagulants, when should you have a blood test (INR*)?	29 (90.6)
14. Before taking a long trip, what should you do?	29 (90.6)
6. What is the ideal dose of oral anticoagulant that you should take?	26 (81.3)
25. In which of the situations below is it necessary to inform you that you use an oral anticoagulant?	26 (81.3)
17. The INR* is a blood test performed to control blood clotting in order to:	26 (81.3)
15. Do you know why you are using an oral anticoagulant?	26 (81.3)
11. Which of the following medications can you use for pain or fever while using oral anticoagulant?	26 (81.3)
9. Which of the following can occur as a complication of oral anticoagulant use?	24 (75.0)
8. If there is a need for you to undergo some type of dental surgery or treatment, what should you do?	23 (71.9)
7. If your INR* is above the value indicated for your health problem, what can happen?	21 (65.6)
20. If you use oral anticoagulant and are going to consume alcoholic beverages such as "pinga" (Brazilian cachaça) and other distilled drinks, beer, draft beer or wine, what precautions should you take?	20 (62.5)
28. In which of the situations below is it necessary to urgently seek health care?	20 (62.5)
10. When you realize that you forgot to take your oral anticoagulant the day before, what is the right thing to do?	19 (59.4)
24. If you have cold, flu, or sore throat symptoms, what can you do while using the oral anticoagulant?	19 (59.4)
22. What can home remedies (herbal teas and roots) and herbal remedies (ginckobiloba and sacred cassava) cause in people who use oral anticoagulants?	18 (56.3)
23. Of the precautions described below, which are the most important for those taking the oral anticoagulant treatment?	18 (56.3)
19. Which of the values below is the ideal INR* result for your health condition?	17 (53.1)
27. Before taking a long trip, what should you do?	16 (50.0)
21. Which of the following activities should you avoid during your oral anticoagulant treatment?	15 (46.9)

Continuation of table 3

18. Which vitamin can alter the action of oral anticoagulants?	15 (46.9)
26. If you have stopped taking the oral anticoagulant for a few days (for example, for 4 days) what is the right thing to do?	12 (37.5)
3. Do you know the name of the blood test that is performed to control blood clotting?	11 (34.4)
Specific for women of childbearing age (who still menstruate) (n=8)	
30. In case of suspected or confirmed pregnancy during oral anticoagulant treatment what should you do?	7 (87.5)
29. If you want to become pregnant during oral anticoagulant treatment, what care should you take?	6 (75.0)
32. The use of oral anticoagulant can:	6 (75.0)
31. When a woman becomes pregnant during oral anticoagulant treatment, what can happen?	5 (62.5)

INR*: International Normalized Ratio

The mean of the values of the scores presented about the general knowledge of patients was close to the maximum value to be scored in the instrument; however, the median revealed the existence of much lower scores that refer to the deficit of knowledge regarding coagulation control and discontinuation of treatment with OAC. About the specific knowledge, scores were close to the maximum value to be scored in the instrument.

DISCUSSION ──────────

In response to the objective of the study it was possible to verify that the average score of general knowledge was 19.8 points, and the average score of specific knowledge was 3.0 points. However, although the average score is close to the score of best knowledge, there was a deficit in some items assessed by the instrument, which reinforces the need for guidance at discharge and careful outpatient follow-up for patients undergoing implantation of metallic heart valve prostheses.

Such findings corroborate the findings of previous studies [7-8] that measured knowledge on oral anticoagulants; however, the aspects related to the knowledge construct are different, since in this study aspects related to INR control and continuous use of the drug showed scores

that demonstrate restricted knowledge of the patients investigated.

The studied sample profile corroborated findings found in other studies [12-13] about patients' knowledge on OAC, since there was a predominance of female, married, professionally inactive patients, with low education and monthly income.

The mean age found in a Brazilian study [12] in which the researchers evaluated 110 patients with metallic prosthetic heart valves compared to the knowledge on the use of OAC was 50.3 years, similar to the mean age of the present investigation, possibly because the choice of metallic prosthesis is common in adult patients due to its durability.

Among the social factors, low education may interfere with the participants' understanding of the therapy used during discharge counseling and/or during outpatient follow-up. With regard to low income, this can interfere with the acquisition of medications and the periodic performance of tests, which can lead to inadequate control of the INR during treatment [13-14].

The predominance of mitral valve involvement, followed by aortic valve involvement, was also found in a study that checked knowledge on OAT [7,14]. Regarding comorbidities, systemic arterial hypertension (SAH) and atrial fibrillation (AF) were the most prevalent among the sample studied, followed by dyslipidemia and diabetes mellitus, data that corroborate a study conducted in a northeastern Brazilian state [12].

Regarding health habits, active or prior smoking may have compromised the evolution of valve disease and may also compromise the treatment. It is imperative to state that satisfactory knowledge on oral anticoagulation strengthens the insertion of the use of the drug in the daily life activities of patients with valve disease [15].

OACs are usually indicated for individuals with cardiovascular diseases, at risk for thromboembolic reactions [16-17]. A German study of patients after valve implantation reinforced the importance of patients being informed about care after metallic heart valve implantation, with emphasis on the continuous use of OAC [18].

Knowledge on the dosage of OAC can be considered a determining factor for the

use consistent with the health needs of individuals after metallic heart valve implantation. OAC has an initial dosage ranging from 2.5 to 5 mg/day, requiring laboratory control of the INR, which should be performed after the fifth day of the surgical intervention. After adjustments are made, the appropriate dose for each specific case should be established [6,17].

Laboratory monitoring should be performed by the INR, a test calculated from prothrombin activities, reflecting the blood clotting time. Monitoring the INR during treatment with ACO is important, as it enables dose adjustment and prevents adverse events of the medication [6,19-20]. Patients must understand how the INR monitoring should occur; therefore, it is of utmost importance that they receive the proper guidance at discharge, after the surgical procedure, in order to avoid adverse events due to the use of OAC.

Understanding the risks of hemorrhagic and thromboembolic complications inherent to the therapy is important for recognizing signs and symptoms that denote the urgent need for medical evaluation [20]. For this, the guidelines at discharge and the reinforcement of such information in the outpatient follow-up are essential.

Analgesics and antipyretics can potentiate OAC effects because they have an action that prevents platelet aggregation. The use of teas and herbal medicines must be monitored, since they can cause alterations in blood coagulation [19]. As a result of these events, patients must be informed about these particularities of OAC use, so that they understand the entire therapeutic process.

Drug interactions between OAC and other medications may cause INR changes. Amiodarone® and simvastatin® directly interfered with the therapeutic dose of OAC, amiodarone® due to reduced hepatic metabolism, and simvastatin® because it binds to plasma proteins, potentiating the effect of OAC and favoring the risk of bleeding [21].

The eating habits have a direct relationship with the values presented in the INR, because foods rich in vitamin K, when ingested in large quantities, potentiate the anticoagulant effect. Conversely, a decrease in these foods may increase the risk of thrombus formation. Thus, the patient needs to be advised about which foods are rich in

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vitamin K [21].

Patients must understand that the sporadic use of alcoholic beverages will reduce OAC metabolism, increasing its effect and raising the risk of bleeding. On the other hand, the continuous use of alcoholic beverages will increase OAC metabolism, reducing its pharmacological effect [22].

It is known that a sedentary lifestyle can compromise the maintenance of therapeutic INR values, and regular physical activity can minimize the risks of complications related to the use of OAC [21]. However, any and all activities, whether sporting or domestic, in which there is an accidental possibility of bleeding, should be avoided during therapy.

The patient's lack of knowledge on the daily use of the medication may impair OAT's effectiveness, since it increases the risks of complications generated by discontinued drug therapy in the occurrence of travel [16,21].

The dialogue between patient and health professional becomes primordial for the effectiveness of actions aimed at the promotion, prevention, and rehabilitation of the health of individuals using OAC. Informing the health care professional about the continuous use of the medication is crucial for decision making aimed at maintaining treatment adherence within the therapeutic range [21].

In women who have metallic valve prosthesis, OAC use will contribute to an increase in flow and/or an increase in the menstrual period. The presence of metallic valve prosthesis in pregnant women has a high risk of thromboembolic complications, and the maintenance of anticoagulation during pregnancy and the puerperium is of utmost importance [23].

Faced with the findings related to the participants' knowledge on the use of OAC, it was observed that there was a lack of studies that showed the knowledge of the respective public, which limited the comparison of the data obtained in this study with other investigations. Another limitation of the study was the restricted number of participants, given that data collection had to be interrupted in the face of the pandemic that took hold in Brazil and the world in early 2020. The current pandemic scenario reinforces the need for efficient guidance on OAT at discharge and during outpatient follow-up of valve patients after implantation of metallic valve prosthesis.

CONCLUSION ————————

In summary, it is possible to conclude that the results point to the existence of knowledge on the use of oral anticoagulants by patients after their first cardiac surgery with metallic valve implantation; however, aspects aimed at strengthening the importance of the continuous use of medication are still important for a better quality of life during drug therapy.

REFERENCES

1. Tarasoutchi F, Montera MW, Ramos AIO, Sampaio RO, Rosa VEE, Accorsi TAD et al. Atualização das Diretrizes Brasileiras de Valvopatias – 2020. Arq Bras Cardiol. v. 115, n. 4, p. 720-775, Oct. 2020. Disponível em: <http://www.scielo.br/scielo.php? script=s ci_ artt ext&pid=S0066-782X2020001200720&lng=en&nrm=iso>. access on 10 May 2021. Epub Oct 23, 2020. https://doi.org/10.36660/abc.20201047.

2. Ramos AIO, Accorsi TAD, Jerônimo AD. Insuficiência mitral. In: Magalhães CC. et al. Tratado de cardiologia SOCESP. Barueri: Manole; 2015. p. 791-796.

3. Fernandes AMS, Pereira FS, Bitencourt LS, Pereira NAV, Bastos GB, Durães AR et al. A influência da escolha da prótese valvar sobre a mortalidade intra-hospitalar no pós-operatório em pacientes submetidos à cirurgia valvar. Rev Bras Cir Cardiovasc. 2014;29(4):559-63. Disponível em: https://www.scielo .br/ sc ielo.php?script=sci_abstract&pid=S0102-76382014000400013&lng=es&nrm=iso&tln g=pt

4. Lorga FAM, Azmus AD, Soeiro AM, Quadros AS, Avezum JA, Marques AC et al. Diretrizes brasileiras de antiagregantes plaquetários e anticoagulantes em cardiologia. Arq Bras Cardiol. 2013;101 (suppl 3:S01–95). Disponível em:

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http://publicacoes.cardiol.br/consenso/2013/Diretriz_Antiagregantes_Anticoagulantes.as

5. Valvulopathies ATI. Terapia anticoagulante nas valvopatias. Rev Soc Cardiol Estado de São Paulo. 2017; 27(3): 228-33.

6. Terra-Filho M, Menna-Barreto SS. Recomendações para o manejo da tromboembolia pulmonar, 2010. J bras pneumol. 2010;36(Suppl1):S01-68. Disponível em: https://www.scielo.br/pdf/jbpneu/v36s1/v36s1a01.pdf

7. Rocha HT, Rabelo E, Aliti G, Souza EN. Knowledge of Patients with Mechanical Valve Prostheses Concerning Chronic Oral Anticoagulant Therapy. Rev Latino-Am Enfermagem. 2010;18(4):S696-702. Disponível em: https://www.scielo.br/scielo.php?scri pt=sci_arttext& pid=S0104-11692 01000 04 00006

8. Cao H, Wu T, Chen W, Fu J, Xia X, Zhang J. The effect of warfarin knowledge on anticoagulation control among patients with heart valve replacement. Int J Clin Pharm. 2020;42(3):861-70. DOI: https://doi.org/10.1007/s11096-020-01043-y

9. Pfeiffer E. A Short Portable Mental Status Questionnaire for the Assessment of Organic Brain Deficit in Elderly Patients. Journal of the American Geriatrics Society. 1975; 23(10):433-41. Disponível em:

https://onlinelibrary.wiley.com/doi/epdf/10.1111/j.1532-5415.1975.tb00927.x

10. Silva LN. Comparação de três instrumentos para avaliação da fadiga em pacientes com insuficiência cardíaca. Universidade de São Paulo [Dissertação] 2016. [cited 2018 jun 1]. Disponível em: https://www.teses. usp.br/teses%20/disponiveis/22/22132/tde-26012017-103129/publico/%20LUMA% 20NASCIMEM TOSILVA.pdf

11. Garcia FSS, Cunha DPT, Manzato RO, Bolela F, Barbetta PA, Dantas RS. Assessing Knowledge of Oral Anticoagulant Therapy: Construction and Validation. Journal of Nursing Meas. 2018;26(1): S53-73. Disponível em: https://pubmed.ncbi.nlm.nih.gov/29724279/

12. Parys, M, Kowalczuk-Wieteska A, Kulik H, Majchrzyk I, Zembala M. A novel survey examining the level of knowledge about anticoagulant and anti-infectious prophylaxis in patients after mechanical cardiac valve implantation. Kardiologia Polska (Polish Heart Journal). 2019; 77(2):225-227.

13. Figueirêdo TR, Nascimento MO, Silveira MMBM, Costa CRB, Queiroga AV, Bezerra SMMSB. Conhecimento de pacientes em acompanhamento ambulatorial sobre a terapia de anticoagulação oral. Rev pesqui cuid Fundam. 2016;8(1):3883-92. Disponível em:
http://www.seer.unirio.br/index.php%20/cuidado%20fundamental/article/view/5162/

14. Kakkar N, Kaur R, John M. Outpatient oral anti-coagulation management: an audit of 82 patients. J Assoc Physicians India. 2005;52:868–72. Disponível em: https://pubmed.ncbi.nlm.nih.gov/16459526/

15. Braz NJ. Fatores determinantes da infecção do sítio cirúrgico em pacientes submetidos a cirurgias de revascularização do miocárdio e implantes de válvulas cardíacas. Universidade Federal de Minas Gerais [Tese] 2017 [cited 2020 mai 12]. Disponível em: https://repositorio.ufmg.br/bitstream/1843/ANDO-AMUNG8/1 /dissert acao_ de_mestrado_nelma_de_jesus_braz_ 2017.pdf

16. World Health Organization. The economics of tobacco and tobacco control. Geneva (Suiça): World Health Organization; 2016. Disponível em: https://cancercontrol.cancer.gov /brp/tcrb/monographs%20/21/docs/m21_complete%20.pdf

17. Serra IC, Ribeiro LCAN, Gemito MLGP, Mendes FRP. Manejo terapéutico de los usuarios con terapia anticoagulante oral. Enferm glob. 2016;15(41):S10-19. Disponível em: http://scielo.isciii.es/scielo.php?script=sci_arttext&pid=S1695-61412016000100002&lng=pt

18. Harter K, Levine M, Henderson SO. Anticoagulation Drug Therapy: A Review. West J Emerg Med. 2015;16(1):S11-17. Disponível em:

https://www.ncbi.nlm.nih.gov/%2   0pmc/ %20ar %20ticles /PMC4307693/pdf/wjem-16-11.pdf

19. Kottmaier M, Hettich I, Deutsch M, Badiu C, Krane M, Ruediger L et al. Quality of Life and Anxiety in Younger Patients after Biological versus Mechanical Aortic Valve Replacement. Thorac Cardiovasc Surg. 2017; 65(3):198-205. DOI: http//dx.doi.org/10.1055/s0036-1584907

20. Molina FT, Zanusso GJ. Anticoagulantes cumarínicos: ações, riscos e monitoramento da terapêutica. Saúde e Biologia. 2014;9(2):S75-82. Disponível em: http://revista2.grupointegrado.br/revista /index.php/sabios2/article/view/1263

21. Leal PM, Amante LN, Girondi JBR, Nascimento ERP, Magalhães ALP. Building solutions for the safety of the patient with heart disease using warfarin: a qualitative study. Texto contexto enferm. 2020;29:e20180002. DOI: https://doi.org/10.1590/1980-265x-tce-2018-0002

22. Simonetti, SH; Mancussi, AC; Bianchi, F. Preditores clínicos intervenientes na adesão de usuários de anticoagulante orais. Enferm Foco. 2019;10:S02-06. Disponível em: http://ver ista .cofen.gov .br/index .php/ enfermagem/article/view/1359

23. Simonetti SH, Faro ACM, Bianchi ERF. Escore de Adesão para Usuários de Anticoagulantes Orais. Int J Cardiovasc Sci.

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2018;31(4):S383-392. DOI: https://doi.org/10.5935/2359-4802.20180028

24. Cavalcante Júnior JL, Nobre MN, Sena RG, Cavalcante JWS, Magalhães RT, Luna FMS. Anticoagulação em gestantes com prótese valvar mecânica. Rev Eletro Acervo da Saúde. 2019;20:S01-06. DOI: https://doi.org/10.25248/reas.e446.2019