

NURSING DIAGNOSES AND RISK OF HEMATOMA AND BLEEDING FOR VASCULAR PROCEDURES PERFORMED IN A LARGE HOSPITAL IN NORTHERN MINAS GERAIS

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Abstract: The World Health Organization (WHO) estimates that in the year 2030, approximately 23.6 million people will die as a result of cardiovascular diseases. Thus, nursing care becomes essential for comprehensive care, as well as for the recovery of clients with cardiovascular and cerebrovascular diseases through the systematization of nursing care. This study aimed to identify the main nursing diagnoses of patients undergoing endovascular therapy in a large hospital located in the north of Minas Gerais and to associate conditions sensitive to the risk of hematoma and bleeding. It refers to a descriptive, documentary study with a quantitative approach that was carried out in the endovascular therapy sector of Santa Casa de Montes Claros - MG. Data analysis was performed using descriptive statistics and bivariate analysis. The study universe consists of 1,266 medical records of clients, who were treated at the endovascular diagnosis and therapy service and underwent therapeutic procedures in the period from 2017 to 2019. 59.0% were female, mean age 65.3 (\pm 13.6), the main comorbidity was arterial hypertension (68.4%) and the most common procedure was coronary angioplasty (67.6%). The most prevalent diagnosis was the risk of hematoma and bleeding (44.4%), which was associated with sex, medications, arterial hypertension, health insurance and other diagnoses. Thus, it is important that nurses know how to classify and identify risks and complications in relation to endovascular procedures so that a care plan is applied according to the patient's need.

Keywords: Nursing process. Cardiovascular diseases. Hemodynamics.

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INTRODUCTION

Brazil has been experiencing a peculiar and rapid change in the eating habits and lifestyle of its population, where it previously had high rates of malnutrition in the 1970s, and by 2008, half of its adult population was overweight. The World Health Organization (WHO) estimates that by the year 2030 approximately 23.6 million people will die as a result of cardiovascular diseases (TESTON).et al., 2016; FREIREet al., 2017).

In this context, it is possible to observe that cardiovascular diseases stand out among the main health problems. These affect the circulatory system as well as other organs, leading to irreversible damage, causing limitations, changes in quality of life, and even death. They are considered chronic non-communicable diseases and are experiencing a growing increase in Brazil due to the aging population and a high incidence of risk factors such as: smoking, alcoholism, dyslipidemia, systemic arterial hypertension (SAH),diabetes mellitus(DM), obesity, sedentary lifestyle, diet lacking in vegetables and fruits, and stress. Changing these habits and adopting a healthy lifestyle is fundamental to preventing these diseases (TESTON).et al., 2016; BRANT et al., 2017; FREIREet al., 2017).

However, preventive policies have not been effective in recent years in Brazil, as the country has undergone a significant transition in its demographic and epidemiological profile, notably regarding stroke and coronary artery disease, two important chronic non-communicable diseases (NCDs). Global stroke epidemiology reveals that it is the second leading cause of death worldwide, with an increasingly early onset in adults aged 35 to 64. It is estimated that by 2030, approximately 7.8 million people will die due to a stroke (BRAZIL).et al., 2014; SOUZA et al., 2017). Hemodynamic procedures are widely used in the diagnosis and treatment of these events.

The period following endovascular procedures demands actions from the healthcare team, ensuring quality care for the client. Therefore, it is the nurse's responsibility to plan and organize individualized care, based on needs not only in the postoperative period but throughout the entire intraoperative period. Nursing care must be qualified, individualized, and carried out through the



nursing diagnosis (ND), and for this, the nurse must have knowledge of the pathology, the setting, and clinical reasoning about the client's situation. (BARRETTA)et al., 2017)

Nursing care becomes fundamental for comprehensive care, as well as in the recovery of clients with cardiovascular and cerebrovascular diseases. Therefore, nursing has increasingly sought to improve its field of practice, based on scientific methodology, such as the Nursing Care Systematization (SAE), which is a fundamental method to ensure the quality of care and organization of nursing work (RIBEIRO).et al., 2017).

Reinforcing that the systematization of nursing care (SAE) is essential to contribute to the identification of problems, establishing care plans for successful treatment, SAE is an activity exclusive to nurses, enabling the professional to identify and group the problems encountered. This allows them to be interpreted and possible care plans to be developed through pre-planned interventions, providing the client with quality care (SANTOS).et al., 2014).

It is therefore observed that it is important to systematize nursing care, as this instrument will guide the nurse's conduct in team management situations, which may result in individualized and humanized care, positively reflecting on the quality of care as well as reducing mortality (AMARANTE et al., 2009).

The nursing process (NP) is a work method that seeks to be an instrument of care in professional practice. In the second phase of the NP, nursing diagnoses (ND) are highlighted, which are clinical assessments of individuals' responses to health problems, capable of guiding nursing interventions, directing care, and encouraging the patient to participate in their treatment, contributing to the achievement of results. Then, special nursing languages, such as the taxonomy of nursing diagnoses developed by NANDA-I, bring standardization to the practice of the profession, pointing out the areas that contribute to nursing in this care scenario (RIBEIRO).one at., 2017; OLIVERA et al., 2016).

The Hemodynamics sector is a specific sector for imaging exams, such as coronary angiography, cerebral and limb arteriography, coronary angioplasty, and aneurysm embolization.



It is demonstrated that the hemodynamics service uses differentiated materials, such as catheters, introducers, and guide wires. These materials have a high cost, and some are reusable (LEMOS).et al., 2017).

Thus, the present study aimed to identify the main nursing diagnoses of patients undergoing endovascular therapy in a large hospital located in Northern Minas Gerais and to associate conditions sensitive to the risk of hematoma and bleeding.

METHODOLOGY

This refers to a descriptive, documentary study with a quantitative approach that was carried out in the endovascular therapy sector of Santa Casa de Montes Claros – MG. Being a documentary research, the study universe consists of 1,266 patient records of those who were treated in the endovascular diagnosis and therapy service and underwent therapeutic procedures between 2017 and 2019.

For data collection, notes from the medical records of patients undergoing vascular procedures at CEDITEN were used, according to the data collection questionnaire. Assessments were made of variables related to socio-demographic and clinical data, seeking to identify the main risks to which they are exposed in order to formulate nursing diagnoses.

Data collection took place between August 2019 and February 2020 in the Human Development Center (CDH) and the Medical and Statistical Archiving Service (SAME). During this period, the researchers experienced some difficulties, such as a lack of available appointment times and power outages during data collection, which delayed the process, among others.

The study was authorized by the Human Development Center (CDH) of the Irmandade Nossa Senhora das Mercês hospital (Santa Casa de Montes Claros – Minas Gerais) and approved by the Ethics and Research Committee of the State University of Montes Claros and the Santa Casa de Caridade de Montes Claros, through opinion CEP/UNIMONTES nº379.298/2019, respecting the



bioethical precepts established according to Resolution nº 466/12, which deals with research involving human beings.

In order to organize and synthesize the collected data to achieve the proposed results, the statistical analysis and organization of this data was performed using SPSS version 20. The database was transcribed from Microsoft Excel. Descriptive statistics were performed with presentation in tables and graphs; the values were described as mean, standard deviation, percentage, minimum, maximum, and absolute values. For bivariate comparison, the diagnostic variable “Risk of hematoma and bleeding” was chosen and cross-referenced with all other categorical variables using the Chi-square test. The significance level adopted was 5%, with a p-value < 0.05 considered statistically valid.

RESULTS

A total of 1266 patients underwent some type of endovascular procedure between 2017 and 2019 at the aforementioned hospital. There was a predominance of females (745 – 59.0%), the average age was 65.3 (\pm 13.6), with the youngest being 6 years old and the oldest 102 years old. Regarding the type of care provided, 66.1% were elective. Concerning chronic diseases, hypertension was the most prevalent (68.4%), and 259 (20.5%) of the patients had diabetes (Table 1).

Regarding medication use, 950 (75.0%) use home medications, and 721 (56.9%) used continuous aspirin + clopidogrel during hospitalization. A large number of procedures were covered by the Unified Health System (SUS) (78.43%), and the remainder were covered by other health insurance plans.



Table 1: Absolute values and percentage distribution of the variables year of the procedure, sociodemographic and health data of patients undergoing endovascular procedures in a hospital in

Northern Minas Gerais.

Variable		N	(%)
Again	2017	435	34,4
	2018	417	32,9
	2019	414	32,7
Sex	Masculine	517	41,0
	Feminine	745	59,0
Service rating	Elective	830	66,1
	Urgency	426	33,9
Agreement	THEIR	993	19,7
	Agreement	246	79,5
	Particular	10	0,8
Hemodynamic Procedures	Peripheral Angioplasty	140	11,1
	Carotid Angioplasty	112	8,9
	Coronary Angioplasty	850	67,6
	Embolization	156	12,4
Chronic diseases*	Hypertension	863	68,4
	Diabetes	259	20,5
	Smoking	29	2,3
	Hypercholesterolemia	12	0,9
Medications*	Home Medical	950	76,1
	AAS + Clopidogrel	721	59,1
Level of consciousness	Conscious	1182	95,9
	Unconscious	50	4,1
Drug allergy	Try	22	1,8
	No	1210	98,2
Bladder Elimination	Try	1137	94,8
	No	1199	5,2

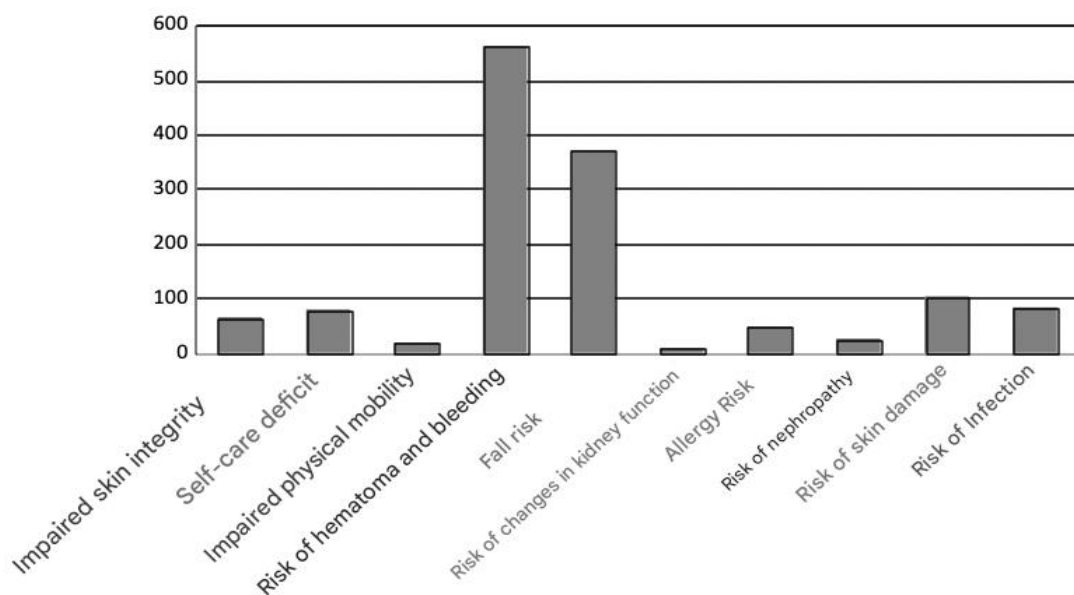
* In these variables, the categories are not complementary, so an individual can belong to two or more categories, and the sum of the percentages does not equal 100%.

Four types of endovascular procedures were recorded, with coronary angioplasty being the most prevalent (67.6%), followed by embolization (12.4%), peripheral angioplasty (11.1%), and carotid



angioplasty (8.9%) (Table 1). The number of times each diagnosis was made for the entire sample was counted; the most frequently cited diagnoses were: Risk of hematoma and bleeding (44.4%); Risk of falls (29.3%); Risk of skin injury (8.2%); Risk of infection (6.6%); Self-care deficit (6.3%); and Impaired skin integrity (5.2%). The average number of diagnoses received per patient was 1.0 (\pm 1.4), with the highest number of diagnoses per patient being 8 and the lowest being 0 (Graph 1).

Chart 1: Absolute values of the number of diagnoses received by patients undergoing endovascular procedures at a hospital in Northern Minas Gerais.



Clinical signs assessed during hospitalization are also described here: mean systolic blood pressure 136.3 (\pm 30.7), diastolic blood pressure 75.3 (\pm 17.6), heart rate 73.8 (\pm 15.5), and mean oxygen saturation 97.6 (\pm 2.2).

Bivariate analyses demonstrate a statistical association when comparing the presence or absence of the diagnosis of Risk of hematoma and bleeding with the other variables. A larger proportion of women (58.4%) were not diagnosed with the risk, and 100% of patients with private health insurance were also not. The chronic condition hypertension is positively associated with the



Risk of hematoma and bleeding, given that a larger proportion of people without the disease (63.2%) do not have the diagnosis. Home medication and the use of aspirin + clobidogrel also showed an association with $p < 0.05$. Regarding the other nursing diagnoses, all were positively associated, such that the presence of Risk of hematoma and bleeding predisposes to the presence of other diagnoses as well (Table 2).

Table 2: Bivariate comparison of the presence of a risk diagnosis for hematoma and bleeding with other sociodemographic variables, health variables, and other nursing diagnoses, absolute values and percentages, of patients undergoing endovascular procedures in a hospital in Northern Minas Gerais.

Variables		Risk of hematoma and bleeding.		P value
		No	Try	
Sex	Masculine	266 (51,6%)	250 (48,4%)	0,017*
	Feminine	433 (58,4%)	309 (41,6%)	
Service rating	Elective	463 (55,9%)	365 (44,1%)	0,772
	Urgency	234 (55,1%)	191 (44,9%)	
Agreement	THEIR	128 (52,2%)	117 (47,8%)	0,010*
	Agreement	554 (56,0%)	436 (44,0%)	
	Particular	10 (100%)	0 (0%)	
Hemodynamic procedures	Peripheral Angioplasty	71 (51,1%)	68 (48,9%)	0,543
	Carotid Angioplasty	66 (58,9%)	46 (41,1%)	
	Coronary Angioplasty	469 (55,4%)	378 (44,6%)	
	Embolization	91 (58,3%)	65 (41,7%)	
High blood pressure	No	252 (63,2%)	147 (36,8%)	0,000*
	Try	449 (52,3%)	410 (47,7%)	
Diabetes	No	571 (56,8%)	434 (43,2%)	0,092
	Try	131 (51,0%)	126 (49,0%)	
Smoking	No	689 (55,9%)	544 (44,1%)	0,236
	Try	13 (44,8%)	16 (55,2%)	
Hypercholesterolemia	No	693 (55,4%)	557 (44,6%)	0,175
	Try	9 (75,0%)	3 (25,0%)	
Home medication	No	200 (67,1%)	98 (32,9%)	0,000*
	Try	492 (51,9%)	456 (48,1%)	



Aas + clopidogrel	No	324 (65,1%)	174 (34,9%)	0,000*
	Try	352 (48,9%)	368 (51,1%)	
Level of consciousness	Conscious	666 (56,4%)	515 (43,6%)	0,062
	Unconscious	21 (42,9%)	28 (57,1%)	
Drug allergy	No	672 (55,7%)	535 (44,3%)	0,916
	Try	12 (54,5%)	10 (45,5%)	
Bladder eliminations	No	28 (45,2%)	34 (54,8%)	0,081
	Try	641 (56,5%)	494 (43,5%)	
Impaired skin integrity	No	687 (57,5%)	508 (42,5%)	0,000*
	Try	13 (20,0%)	52 (80,0%)	
Deficit of self-care	No	681 (57,6%)	501 (42,4%)	0,000*
	Try	20 (25,3%)	59 (74,7%)	
Risk of falling	No	662 (74,4%)	228 (25,6%)	0,000*
	Try	37 (10,0%)	332 (90,0%)	
Allergy risk	No	693 (57,2%)	518 (42,8%)	0,000*
	Try	7 (14,6%)	41 (85,4%)	
Risk of skin injury	No	662 (57,4%)	491 (42,6%)	0,000*
	Try	34 (33,0%)	69 (67,0%)	
Risk of infection	No	673 (57,2%)	504 (42,8%)	0,000*
	Try	27 (32,5%)	56 (67,5%)	

* P-value < 0.05, statistically significant.

DISCUSSION

This study achieved its proposed objective by identifying the main nursing diagnoses used for patients undergoing endovascular procedures in hemodynamics, based on the absolute and relative frequency of the main nursing diagnoses: Risk of hematoma and bleeding, Risk of falls, Risk of skin injury, Risk of infection, Self-care deficit, and Impaired skin integrity. Furthermore, the research was able to associate the nursing diagnosis of Risk of hematoma and bleeding with the study variables: sex, health insurance, hypertension, home medication, aspirin + clopidogrel, impaired skin integrity, self-care deficit, risk of falls, risk of allergies, risk of skin injury, and risk of infection.

Studies indicate that the prevalence of patients with cardiovascular diseases and endovascular



procedures is more common among men. For example, a study of patients undergoing coronary angioplasty shows that “65.89% of men are predominant, while women represent 34.11% of the total number of samples”. However, in this study, the prevalence of endovascular procedures was prominent among women, representing 58.84%, while men represented 40.83% (LIMA).et al.,2018).

Regarding chronic diseases and comorbidities, Systemic Arterial Hypertension (68.4%) and Diabetes Mellitus (20.5%) stand out. These comorbidities were also found in a study that identified that 78.9% of subjects had Systemic Arterial Hypertension and 57.9% had Diabetes Mellitus. In another study, the frequent comorbidities were Systemic Arterial Hypertension (50%), Diabetes Mellitus (25%), and Systemic Arterial Hypertension + Diabetes Mellitus (10%). These numbers reinforce the need for health professionals to implement health education and necessary actions at different levels of care, both for early diagnosis and access to treatment of these pathologies so that they do not affect the health of individuals requiring endovascular treatment in the future (CRUZ).et al., 2010; ROCHAet al., 2006).

These numbers reinforce how important knowledge of risks and comorbidities is at different levels of healthcare. Aiming to prevent potential complications, nursing professionals should invest efforts in the Nursing Process, focusing on building a good diagnosis, thus enabling them to provide holistic, individualized, and humanized care, highlighting the importance of the Nursing Process in the care of patients undergoing endovascular procedures, with the perspective of providing satisfactory care (CRUZ).et al.,2010; ROCHAet al., 2006).

Cardiovascular diseases have been the leading cause of death and are responsible for a high frequency of hospitalizations. Much progress has been made in the treatment of coronary heart disease, and percutaneous intervention is becoming increasingly prevalent. In this context, patient care is provided by a multidisciplinary team, and the nurse plays an important role in care, as they are the professional who assists the patient throughout their hospital stay (COLÓSIMO).et al., 2015).

The nurse responsible for the Hemodynamics sector prioritizes comprehensive care from a holistic perspective of the individual, addressing human responses to health conditions and life



processes, or vulnerabilities to such responses, thus identifying health problems and risk states. Based on the characteristics found in the anamnesis and physical examination, nursing diagnostic indicators are identified, including defining characteristics and factors related to the problem, as well as vulnerabilities, which indicate risk diagnoses for that patient. It is emphasized, therefore, that the diagnostic phase guides the achievement of results sensitive to nursing interventions (NANDA).et al., 2015).

Nursing diagnoses are based on the following principle: “a clinical judgment of the individual’s, family’s, or community’s responses to vital processes or current or potential health problems, which provides the basis for selecting nursing interventions to achieve outcomes for which the nurse is responsible.” Therefore, clinical judgment of the individual’s and family’s responses, vital signs, and current or potential health problems is applied, strengthening the selection of nursing interventions to achieve outcomes for which the nurse is responsible. The effective application of the nursing process leads to improved quality of care (ARAÚJO).et al., 2005).

In this study, the diagnosis of Risk of Bleeding and Hematoma was the most predominant, with invasive procedures being a risk factor. Risk of bleeding is defined as “vulnerability to a reduction in blood volume that can compromise health.” According to a study conducted in a hemodynamics laboratory of a university hospital in the Metropolitan Region of Rio Grande do Sul, Brazil, with patients undergoing cardiac catheterization, “bleeding at the puncture site was observed as the second most common vascular complication.” Another study, conducted in 47 hospital centers across all Brazilian federative regions, analyzed the occurrence of adverse cardiovascular events in patients undergoing angioplasty according to the arterial access route, and found severe bleeding in 1.1% of the sample, with no statistically significant difference between the radial and femoral routes. (VASCONCELOS)et al., 2015)

Similarly to the present study, another study conducted in the Hemodynamics unit of two different hospitals located in the Itajaí Valley region of Santa Catarina, which aimed to characterize the nursing care prioritized by the hemodynamics nurse for patients undergoing cardiac catheterization



and coronary angioplasty procedures, presented the risk of bleeding and hematoma as one of the main nursing diagnoses (RÉGIS A.P., ROSA G.C.D., LUNELLI T, 2017).

However (NEVES et al., (2018) contradicts in its study conducted in a Coronary Intensive Care Unit (CICU) of a Public Hospital in the Federal District between December 2016 and March 2017 that the main nursing diagnoses in patients undergoing vascular procedures are impaired cardiovascular function and risk of ineffective renal perfusion.

Angioplasty it is a This procedure can be performed on patients during cardiac catheterization and involves, in the immediate post-procedure period, restricting movement of the lower limbs and trunk, mainly in the first eight hours after a heart attack, to prevent complications such as hematoma formation or hemorrhage, and there may also be a risk of falls (VAUGHANS).et al., 2012). This justifies the high frequency of diagnoses related to self-care, bed mobility, and bleeding risk in this study.

The risk of bleeding and hematoma in angioplasty is related to the surgical treatment or the presence of an aneurysm. The risk of infection was one of the prevalent diagnoses in the study and may be related to invasive procedures such as bladder catheterization, central access, chest drains, as well as tissue destruction and inadequate primary defenses (broken skin) due to cardiac surgery (OLIVEIRA).et al.,2012; REIS et al.,(2010). Invasive procedures and prolonged hospital stays increase susceptibility to pathogens. Therefore, the greater the number of invasive procedures, the greater the risk of infection (OLIVEIRA).et al.,2012; REIS et al., 2010).

Some studies have shown that vascular complications occur mainly in the first six hours after invasive endovascular procedures. This shows how much action the nursing team can take in preventing and reducing major complications. Care provided only to recovered patients requires attention and needs to be properly managed. The nursing prescription after the operation should mainly include rest time, checking the pulse and puncture site, vital signs, and paying special attention to the treatment of bleeding and hematoma (ROCHA).et al., 2009; PAGAN et al., 2012).

The nursing diagnosis for risk of falls is the most common after brain procedures such



as aneurysm embolization, followed by other diagnoses such as: impaired physical mobility, risk of aspiration, impaired ambulation, impaired verbal communication, and urinary incontinence (HERDMAN et al., 2018).

A study on the mechanisms involved in the increased risk of bleeding in patients with a history of stroke or transient ischemic attack using antiplatelet agents showed that patients using the anticoagulant Clopidogrel have a higher incidence of major bleeding, according to studies that included patients with...unstable ischemic myocardial syndromelt varies from 2% to 17.6%. This variation depends on the bleeding classification used, the characteristics of the population, the techniques employed in the hemodynamics laboratory (puncture site, size of introducers, use of occlusion devices, among others) and the antithrombotic regimen employed (DOKTOROVA).et al.,(2013). In this study, 56.95% of patients use anticoagulants, ASA + Clopidogrel, which presented a higher risk of bleeding. Therefore, greater attention from nursing professionals regarding the use of this medication is highlighted.

Stroke and coronary artery disease are considered major public health problems, not only in terms of hospital care at the time of the stroke, but also in the rehabilitation and quality of life of these patients, who often require expensive and lengthy treatments that do not yield the expected results, leading to individuals who are unproductive for society (RODRIGUES).et al.,2008; ANDRADEet al., 2009).

Therefore, it is becoming increasingly necessary for nursing professionals to be trained to care for these patients from the moment they enter the hospital. This requires that the nursing team provide these different types of care and that their practices be grounded in the science of nursing care, based on theories and research, such as the nursing process, patient assessment, nursing diagnosis, planning, outcome setting, intervention, and continuous patient reassessment (HERDMAN).et al.,2018; FIVEet al., 2016).

The present study presented limitations such as its cross-sectional nature and the sample of users from a single service, which, although representative, makes it difficult to extrapolate the results



to other scenarios. During the data collection period, several difficulties were identified, including scheduling conflicts between the researchers and the research locations, due to the use of the rooms for training, since they were the same rooms used both for the research and by the institution for internal activities. Other difficulties relate to the lack of electricity at the institution, and finally, access to some information present in the data collection instrument.

CONCLUSION

The application of the nursing process is directly associated with the control of each risk factor, which in most cases are modifiable. The results highlight the need for measures to promote, prevent, and rehabilitate clients already affected by cardiovascular diseases, seeking to improve the quality of life of the individual. The association of hematoma and bleeding risk with the variables identified points to a constant need for attention and observation by nursing professionals regarding the profile of the patients served, their comorbidities, medications used, and clinical condition.

It is assumed that the data from this research can contribute to the creation of plans for carrying out actions with an emphasis on the promotion, protection, and rehabilitation of the population. Therefore, the importance of continuing to analyze the nursing diagnoses of clients undergoing vascular procedures is noted. This is done with a view to a line of care aimed at reducing harm and complications through the training of healthcare teams, thus contributing to the quality of care provided.

REFERENCES

AMARANTE, L.N.; ROSSETTO, A.P.; SCHNEIDER, D.G. Systematization of nursing care in an intensive care unit supported by Wanda Horta's theory. *Rev esc enferm usp*, v. 43, n. 1, p. 54-64, 2009.

ANDRADE af, PAIVA ws, AMORIM rlo, figueiredo eg, neto er. Mechanisms of brain injury in



traumatic brain injury. São Paulo: Revista Associação Médica Brasileira. 2009;55(1):75-81. [cited 20 Jul 2018].

ARAÚJO lao, BACHION mm. Nursing diagnoses of the moving pattern in elderly people from a community served by the family health program. Rev esc enferm usp. 2005; 39(1):53-61.

BARRETTA, J. CRISTINA, de AUDA, J. MARIA, CUNICO BARANCELLI, MARCIA DOMÊNICA, ANTONIOLLI, DAIANE, Postoperative care in cardiac surgery: reflecting on nursing care. Revista de Pesquisa Cuidado é Fundamental Online [Internet]. 2017; 9 (1):

BRANT, L. C. C.; et al. Variations and differentials in cardiovascular disease mortality in Brazil and its states, in 1990 and 2015: estimates from the Global Burden of Disease study. Rev bras epidemiol. P. 16-128, 2017.

BRAZIL. MINISTRY OF HEALTH. SECRETARIAT OF HEALTH CARE. DEPARTMENT OF PRIMARY CARE. National Food and Nutrition Policy. 1st ed., 2013.

COLÓSIMO, F.; SOUSA, A.; SILVA, G.; PIOTTO, R.; PIERIN, A. Arterial hypertension and associated factors in patients submitted to myocardial revascularization. Rev Esc Enferm USP [Internet], v. 49, n. 2, p. 201-7, 2015.

CRUZ, A.P.O.; LOPES, R. Nursing diagnosis in the postoperative period of cardiac surgeries. Hello, v. 29, n. 3, p. 293-312, 2010.

DOKTOROVA, M.; MOTOVSKA, Z. Clinical review: bleeding - A notable complication of treatment in patients with acute coronary syndromes: incidence, predictors, classification, impact on prognosis, and management. Crit Care, v. 17, n. 5, p. 239-51, 2013.

FREIRE, a. K. S.; et al. Overview of cardiovascular diseases in Brazil over the last fourteen years from a health promotion perspective. Health and Development Magazine, v. 11, n. 9, 2017.

HERDMAN TH, KAMITSURU s. NANDA-I Nursing Diagnoses – Definitions and Classifications. 11th ed. São Paulo: Artmed Editora; 2018. https://www.scielo.br/pdf/reben/v71n6/pt_0034-7167-reben-71-06-2883.pdf



LEMOS, I.M.N.; et al. The role of the nurse within the hemodynamics unit. International nursing congress theme: good practices of nursing representations in the construction of society. 9-12, 2017.

LIMA, M.S.M. et al. Clinical and epidemiological aspects of patients undergoing Percutaneous Coronary Intervention in a university hospital. Bras Enfe Magazine, v. 71, n. 6, p. 3056-63, 2018.

NANDA International. NANDA Nursing Diagnoses: Definitions and Classification 2015-2017. Porto Alegre: Artmed; 2015.

NEVES, R. S.; ASSUNÇÃO, L. S. F. Nursing diagnoses in the coronary intensive care unit: using the conceptual map. Com. Ciências Saúde. v.29, n.4, p.226-235. 2018.

OLIVEIRA ARS, COSTA AGS, MOREIRA RP, CAVALCANTE TF, ARAÚJO TL. Nursing diagnoses of the activity/exercise class in patients with stroke. Rio de Janeiro: UERJ Nursing Journal. 2012;20(2):221-28.

OLIVEIRA, D. C.; BEZERRA, S. T. F.; MOURA, D. J. M.; CABRAL, R. L. Health education in the prevention of cardiovascular diseases: an intervention study. Academic Dialogues Journal fortaleza, v. 5, n.1, jan./jun. 2016.

PAGANIN, A.; RABELO, E.R. Clinical Validation of the nursing diagnoses of Impaired Tissue Integrity and Impaired Skin Integrity in patients subjected to cardiac catheterization. J Adv Nurs, v. 69, n. 6, p. 1338-45, 2013.

RÉGIS, A. P., ROSA, G. C. D., LUNELLI, T. Nursing care in cardiac catheterization and coronary angioplasty: development of an instrument. Revista Recien. São Paulo: 2017; v. 7, n. 21, p. 3-20. Available at: Accessed on: May 31, 2018

REIS FC. Urinary incontinence of neurogenic origin. [internet]: Portuguese Association of Neurourology and Urogynecology. 2010.

RIBEIRO, A.L. et al. Cardiovascular health in brazil: trends and perspectives. Arq bras cardiol, v. 109, n. 3, p. 231-240, 2017.

ROCHA, L.A.; MAIA, T.F.; SILVA, L.F. Nursing diagnoses in patients undergoing cardiac surgery.



Rev Bras Enferm, v. 59, n. 3, p. 321-6, 2006.

ROCHA, V.S.; ALITI, G.; MORAES, M.A.; RABELO, E.R. Three-hour rest period after cardiac catheterization with a 6 F sheath does not increase complications: a randomized clinical trial. Rev Bras Cardiol Invas, Dec, v. 17, n. 4, p. 512-7, 2009.

RODRIGUES, TP, DIAS MA, HOHL A, MAZZUCO TL. Pathophysiological bases of traumatic brain injury and post-traumatic pituitary insufficiency. Londrina: biosaúde. 2008;10(2):129-46.

SANTOS WN. Systematization of nursing care: the historical context, the process and obstacles to implementation. Journal of management & primary health care. 2014;5(2):153-158.

SOUZA HP, WERNEC GL, MEDEIROS LT, SABORZA CP, SANTOS JPC. Spatial analysis of causes of death from cardiovascular diseases and associated factors in an area where a large project is being implemented. Brazilian Journal of Medical Geography and Health, 13(24):199-214, 2017.

TESTON, E.F.; CECÍLIO, H.P.M.; SANTOS, A.L.; ARRUDA, G.O. RADOVANOVIC, C.A.T.; MARCON, S.S. Factors associated with cardiovascular diseases in adults. Medicina (Ribeirão Preto. Online), p. 95-102. 2016.

VASCONCELOS, A. C.; CASTRO, C. G. A.; SILVA, D. F.; SOUSA, V. J. Frequency of nursing diagnoses in a surgical clinic. Rev RENE, 2015.

VAUGHANS bm. Fundamentals of nursing demystified: a learning guide. 1st ed. Porto Alegre: AMGH, 2012.

