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# Profile of nursing diagnoses in people with hypertension and diabetes

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## Profile of nursing diagnoses in people with hypertension and diabetes

**Objective.** To identify the profile of nursing diagnoses in people with hypertension and diabetes in primary health care. **Methods.** A cross-sectional study involving 175 individuals followed up in eight primary health units of Minas Gerais, Brazil. Data collection was made through interview and physical examination, and diagnostic inference was made according with NANDA-I Taxonomy II. Results. The average age of the users was 62.1 years and the female gender predominated (66.9%). A total of 26 diagnoses were identified, an average of 16 per client (standard deviation=3.9). The most frequent problem-focused diagnosis were: Ineffective Health Management (98.9%), Ineffective Peripheral Tissue Perfusion (78.3%), Sedentary lifestyle (74.3%), Obesity (54.3%) and Insomnia (51.4%). With respect to the defining characteristics and related factors, the average per person was 24 and

28, respectively. **Conclusion.** In this group of clients, the most frequent diagnoses were in the domain activity/rest. These diagnoses are the basis for planning nursing interventions and provide improved quality of life for these clients.

**Descriptors:** nursing diagnosis; hypertension; diabetes mellitus, type 2; public health.

## Perfil de diagnósticos de enfermería en personas hipertensas y diabéticas

**Objetivo.** Identificar el perfil de diagnósticos de enfermería en personas hipertensas y diabéticas usuarios de la atención primaria en salud. **Métodos.** Estudio de corte transversal realizado con 175 usuarios acompañados en ocho unidades básicas de salud de Minas Gerais, Brasil. La recolección de los datos fue realizada a partir de la historia clínica y de la exploración física. La inferencia

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diagnóstica se realizó de acuerdo con la Taxonomía II de la NANDA-I. **Resultados.** El promedio de edad de los usuarios estudiados fue de 62.1 años; predominó el sexo femenino (66.9%). Se identificaron 26 diagnósticos de enfermería, con un promedio de  $16 \pm 3.9$  por usuario. Los diagnósticos enfermeros focalizados en el problema más frecuente fueron: Gestión Ineficaz de la Salud (98.9%), Perfusión Tisular Periférica Ineficaz (78.3%), Estilo de Vida Sedentario (74.3%), Obesidad (54.3%) e Insomnio (51.4%). Con respecto a las características definitorias y a los factores relacionados el promedio por persona fue de 24 y 28, respectivamente. **Conclusión.** En este grupo de usuarios, los diagnósticos más frecuentes fueron del dominio actividad/reposo. Estos diagnósticos son la base para la planeación de las intervenciones de enfermería que conducen al mejoramiento de su calidad de vida de los pacientes.

**Descritores:** diagnóstico de enfermagem; hipertensão; diabetes mellitus tipo 2; saúde pública.

### Perfil de diagnósticos de enfermagem em pessoas hipertensas e diabéticas

**Objetivo.** Identificar o perfil de diagnósticos de enfermagem em pessoas hipertensas e diabéticas

## Introduction

Systemic arterial hypertension (SAH) and diabetes mellitus (DM) are chronic noncommunicable diseases (CNCDS), that is, diseases that are persistent and require permanent care.<sup>(1)</sup> Global data indicate that, in 2015, 415 million people between 20 and 79 years of age were living with DM and it is estimated that in 2040 there will be 642 million people with this disease, increasing by 65% in Central and South America.<sup>(2)</sup> Epidemiological studies indicate that diabetes and hypertension are commonly associated conditions.<sup>(3,4)</sup> The prevalence of hypertension is approximately twice as high among diabetics compared to non-diabetics. This alarming information is mainly due to sedentary lifestyle, obesity and the aging of the world population.<sup>(4)</sup>

Considering the increasing incidence of new cases of CNCDS, the need for preventive and control actions have become crucial, since they represent

usuárias da Atenção Primária à Saúde. **Métodos.** Estudo de corte transversal, realizado com 175 indivíduos acompanhados em oito unidades básicas de saúde de Minas Gerais, Brasil. A coleta dos dados aconteceu através de entrevista e exame físico e a inferência diagnóstica foi feita de acordo com a Taxonomia II da NANDA-I. **Resultados.** A média de idade dos clientes foi de 62.1 anos e predominou o sexo feminino (66.9%). Foram identificados 26 diagnósticos, média de 16 por cliente (desvio padrão=3.9). Os diagnósticos de enfermagem com foco no problema mais frequentes foram: Controle Ineficaz da Saúde (98.9%), Perfusão Tissular Periférica Ineficaz (78.3%), Estilo de Vida Sedentário (74.3%), Obesidade (54.3%) e Insônia (51.4%). Com respeito às características definidoras e aos fatores relacionados a média por pessoa foi de 24 e 28, respectivamente. **Conclusão.** Neste grupo de clientes os diagnósticos mais frequentes foram do domínio atividade/reposo. Estes diagnósticos são a base para o planejamento das intervenções de enfermagem que conduzem ao melhoramento da qualidade de vida desses clientes.

**Descritores:** diagnóstico de enfermagem; hipertensão; diabetes mellitus tipo 2; salud pública.

an important public health problem.<sup>(5)</sup> In Brazil, the monitoring of individuals with a diagnosis of SAH and DM should be carried out primarily by Primary Health Care (PHC).<sup>(3,5)</sup> PHC is considered the gateway to the health system, by establishing its own level of care, with the structuring of service in the programmatic dialectics, in the longitudinal care, comprehensiveness and in the coordination of health actions and services.<sup>(3,5)</sup> Although it has been established for more than a decade in Brazil, the standard of care for people with SAH and DM by PHC, that is, the Hiperdia program, which consists of the continuous monitoring of these individuals along with the basic health units (BHU) of the Brazilian Health System (SUS), with the provision of medicines and the promotion of healthy living habits, there is still a low percentage of follow-up of these people by the professional teams of the BHUs.<sup>(6,7)</sup> Therefore, it is essential that professionals maintain the provision of a comprehensive, effective and quality care.<sup>(1,3,4)</sup> In

this way, in addition to curative care, professionals must be able to perform early detection of risk factors for CNCs, as well as organize strategies for their prevention.<sup>(3)</sup>

Thus, nursing can act in an expressive, evidence-based manner, identifying human responses and establishing strategies that provide for the recovery of health and/or the improvement of individual or collective well-being. For this, nursing needs to use tools, such as the Nursing Process (NP), which, when executed using standard languages<sup>(7)</sup> and encompassing nursing diagnoses of NANDA International (NANDA-I),<sup>(8)</sup> systematizes the care provided to the person, family or community focusing on the comprehensive care and interaction between professional-client-family.<sup>(7,8)</sup> Nursing diagnoses (ND) are clinical judgments derived from interpretations of information/data raised during the nursing appointment.<sup>(8)</sup> They compose the synthesis of clinical reasoning and are primordial in the orientation of nursing care planning, implementation of interventions and evaluation of care provided.<sup>(7)</sup> The situations/potentialities of nursing diagnoses are: problem-focused, health promotion and risk promotion.<sup>(8)</sup> The elaboration of ND brings multiple benefits, such as an objective assessment of care; it helps in determining priorities in nursing care, promotes a continuous development of the profession, contributes to improving the quality of care and facilitates the selection of the most important nursing interventions that lead to better results.<sup>(10,11)</sup>

In a systematic review of the evidence of the use of standardized nursing language, the authors emphasized the importance of conducting studies to link the use of taxonomies with the health outcomes of clients.<sup>(9)</sup> Studies addressing ND for hypertensive and diabetic individuals were found, however, with small number of participants and convenience sampling,<sup>(12)</sup> case study,<sup>(13,14)</sup> others studies addressing ND/nursing interventions for hypertensive people only<sup>(15-17)</sup> or describing the ND/nursing process for diabetics<sup>(18,19)</sup> and addressing the management of the two chronic diseases without describing the ND.<sup>(20,21)</sup> Therefore, although there has been

a wide discussion about the nursing process and the management of hypertension and DM, there has also been a shortage of articles describing the profile of ND of hypertensive individuals and also diabetic users of PHC with sample size from the population of interest and with data obtained through anamnesis and physical examination of all the participants by the researchers themselves. Within this perspective, this study is of great relevance to improve the care of nurses working in PHC, as well as to corroborate or confront the existing NDs in the literature. Therefore, the objective of this study was to identify the profile of nursing diagnoses of hypertensive and diabetic people using Primary Health Care.

## Methods

This is an exploratory and descriptive study, carried out in eight BHUs located in the state of Minas Gerais, Brazil. These BHUs were intentionally chosen because they received nurses linked to a residency program on Primary Health Care/Family Health Care. This is a postgraduate specialization with a weekly workload of 60 hours intended for in-service teaching of health-related professions, in this case, nurses. One of the structuring axes of residencies should be the comprehensiveness of care with the adoption of evidence-based practice; therefore, the use of the NP is essential.<sup>(22)</sup> People with type 2 diabetes mellitus and hypertension, enrolled in the Hiperdia program, were chosen as the selection criteria in the participating health units. Inclusion criteria were clients over 18 years of age with preserved cognitive ability, which was verified through the application of the Mini Mental State Exam, an important tool for screening cognitive impairment to be used in research and clinical evaluation, validated for the Brazilian population.<sup>(23)</sup> Exclusion criteria included individuals with other medical diagnoses and hospitalizations during the study period.

Data were collected at the participant's home or at their reference health unit by two researchers, from September 2015 to July 2016. The study population comprised 175 adults with hypertension and diabetes. The sample

calculation was defined by means of the z statistic test, with a normal distribution, estimating a proportion referring to the population of interest for a significance level of 5% and statistical test power of 80%. Data were obtained by primary source directly with the clients, through interview and physical examination.

For the clinical evaluation of the participants and interview, a form prepared by the authors was used, based on two previous studies. The first, on the validation of a questionnaire with diabetic adults in Brazil and the other, on an instrument for nursing appointment of hypertensive patients in family health.<sup>(24,25)</sup> This form contained data regarding the date of birth, sex, marital status, SUS card number, profession, religion, occupation, housing, information on the disease and treatment, medications in use, family history, lifestyle, psychosocial data, vital signs and physical examination with relevant information about organs and systems. The collected data were examined based on the process of diagnostic reasoning proposed by Gordon, which involves the following steps: information collection, interpretation of information, grouping of information and denomination of nursing diagnoses, in this case, using the NANDA-I Taxonomy.<sup>(8)</sup>

The indications and inferences obtained, based on the scientific basis of nursing diagnoses, were performed by two authors independently. One of the researchers was the one who collected and filled out the instruments with the clients, and the other researcher, a specialist in nursing diagnosis, member of NANDA-I, performed the diagnostic reasoning process based on the filled instruments. Afterwards, the nursing diagnoses were compared and, when there was disagreement, the two researchers debated until reaching an agreement. The data obtained were organized in a database built in the software Excel version 2016 and statistical analysis was done through the Statistical Package for the Social Sciences (SPSS), version 21.0 for Windows® and Program Epi Info, version 7, according to absolute and relative measures of numerical frequency, measures of central tendency and dispersion.

This research was approved by the Research Ethics Committee of a Federal University of Minas Gerais, Brazil (CAAE: 46439415.7.0000.5545 and Opinion no. 1,218,267/2015). Data were collected after the participant signed the Informed Consent Form.

## Results

Of the 175 hypertensive and diabetic subjects, 66.9% were female. The age ranged from 39 to 89 years, with a mean of 62.1 years and a standard deviation of 10.6. The majority were married (62.3%), had some religious practice (93.1%), incomplete elementary school (57.7%), were retired or pensioner (%), had white skin color (52%), and 94.8% did not live alone. All interviewees lived in urban areas with access to running water and basic sanitation (Table 1).

The average length of time patients lived with the disease was 17.8 years for hypertension and 10.8 years for diabetes. Regarding users' knowledge on their health problem, 72% were poorly oriented while only 20.6% showed some knowledge about their current condition. Regarding the risk classification of these users in the Hiperdia program, 71.4% were considered individuals at high risk for the development of cardiovascular diseases and complications associated with hypertension and diabetes, 16.6% were at moderate risk and 12% at low risk.

From the diagnostic reasoning process, 26 different diagnoses were identified, with a mean of 16 ND per client, 39 defining characteristics, 46 related factors and 62 risk factors (Table 2).

Most of the nursing diagnoses found were of the domain activity/rest (38.5%), followed by nutrition (15.4%), safety/protection (15.4%), health promotion (11.5%), elimination and discharge (7.7%), coping/stress tolerance (7.7%) and comfort (3.8%). 13 (50%) ND were problem-focused, 12 (46.1%) were risk nursing diagnoses and one (3.9%) diagnosis was of health promotion. Nursing diagnoses were observed in all clients: risk for ineffective gastrointestinal

**Table 1.** General characteristics of 175 hypertensive and diabetic subjects. Minas Gerais Brazil, 2016

Variable	<i>n</i>	%
Sex		
Female	117	66.9
Male	58	33.1
Age Group		
39 to 59 years	73	41.7
60 to 79 years	95	54.3
80 to 89 years	7	4.0
Marital status		
Married	109	62.3
Single	15	8.6
Others	51	29.1
Religious Practice		
Yes	162	93.1
No	12	6.9
Education		
Uneducated	28	16.0
Incomplete elementary school	101	57.7
Complete elementary school	20	11.4
Incomplete high school	12	6.9
Complete high school	9	5.1
Complete higher education	5	2.9
Profession		
Retired/pensioner	92	52.6
Paid activity	82	46.8
Unemployed	1	0.6
Skin color		
White	91	52.0
Brown	49	28.0
Black	35	20.0
Own home		
Yes	141	80.6
No	34	19.4
Lives with the family		
Yes	166	94.8
No	9	5.2
Resident in urban area	175	100.0
Access to running water	175	100.0
Basic sanitation	175	100.0



**Table 2.** Distribution of nursing diagnoses, defining characteristics, related factors and risk factors formulated for the 175 hypertensive and diabetic participants. Minas Gerais Brazil, 2016

Variable	Total	Mean	Standard deviation	CI* 95%
Nursing Diagnoses	26	16	3.9	15.4 – 16.5
Defining Characteristics	39	24	5.8	23.1 – 24.8
Related Factors	46	28	6.8	27.0 – 28.9
Risk factors	62	38	9.2	36.6 – 39.3

\* Confidence Interval

perfusion, risk for ineffective renal perfusion, risk for reduced cardiac tissue perfusion, risk for ineffective peripheral tissue perfusion, risk for impaired cardiovascular function. Other high frequency diagnoses above the 75th percentile were: ineffective health control (98.9%), risk for unstable blood glucose level (92.6%), risk for constipation (82.3%), ineffective peripheral tissue perfusion (78.3%), risk for activity intolerance (78.3%). Nursing diagnoses were organized according to 75th, 50th, 25th and below 25th percentiles (Table 3). In the data found, the nursing diagnoses that presented above the 50th percentile were analyzed.

Table 4 below shows the distribution of the defining characteristics and the most significant related factors in the ND proposed for the hypertensive and diabetic clients of this study. It shows that, in relation to the ND with a high frequency, above the 75th percentile, that is, "Ineffective Health Control", the defining characteristics: Failure to include treatment regimen in daily living (98.9%) and Ineffective choices in daily living for meeting health goals (98.9%) and; the related factor: Perceived barrier (90.3%) were the most observed in the participants. In the NE "Ineffective Peripheral

Tissue Perfusion", the defining characteristic: Altered skin characteristics (78.3%) and the related factors: SAH and DM (100.0%) were the most examined in participants.

Table 5 below shows the risk diagnoses of hypertensive and diabetic clients according to the vulnerabilities. The risk factor of high frequency, i.e., above the 75th percentile, that is, "risk for ineffective gastrointestinal perfusion", the risk factor DM (100.0%) was the most observed in people of this group research; regarding the ND "Risk for ineffective renal perfusion", "Risk for decreased cardiac tissue perfusion", "Risk for ineffective peripheral tissue perfusion", "Risk for impaired cardiovascular function", risk factors for hypertension (100.0%) and DM (100.0%). With regard to the ND "Risk for unstable blood glucose levels", the most commonly found risk factors were: Insufficient control of diabetes (92.6%) and Ineffective drug control (90.3%) and; in relation to the ND "Risk for constipation", the risk factor Average physical activity lower than recommended (78.3%) was the most prevalent. Regarding the ND "Risk for activity intolerance", the risk factor circulatory problem (78.3%) stood out in hypertensive and diabetic subjects in this study.

**Table 3.** Distribution of the nursing diagnoses formulated for the 175 hypertensive and diabetic participants, according to the domains of human response and according to the percentile. Minas Gerais Brazil, 2016

Domains	Nursing Diagnoses	<i>n</i>	%	CI* (95%)	Percentile
Activity/Rest	Risk for Ineffective Gastrointestinal Perfusion	175	100	96.4 - 100	P75
Activity/Rest	Risk of Ineffective Renal Perfusion	175	100	96.4 - 100	P75
Activity/Rest	Risk for Decreased Cardiac Tissue Perfusion	175	100	96.4 - 100	P75
Activity/Rest	Risk of Ineffective Peripheral Tissue Perfusion	175	100	96.4 - 100	P75
Activity/Rest	Risk for Impaired Cardiovascular Function	175	100	96.4 - 100	P75
Health promotion	Ineffective Health Control	173	98.9	95.5 - 99.8	P75
Nutrition	Risk for Unstable Blood Glucose Level	162	92.6	87.4 - 95.8	P75
Elimination and discharge	Risk for Constipation	144	82.3	75.6 - 87.5	P75
Activity/Rest	Ineffective Peripheral Tissue Perfusion	137	78.3	71.3 - 84.0	P75
Activity/Rest	Risk for Activity Intolerance	137	78.3	71.3 - 84.0	P75
Health promotion	Sedentary Lifestyle	130	74.3	67.0 - 80.4	P50
Coping/Stress Tolerance	Readiness for Enhanced Coping	98	56.0	48.3 - 63.4	P50
Nutrition	Obesity	95	54.3	46.6 - 61.8	P50
Safety/Protection	Risk for Impaired Skin Integrity	92	52.6	44.9 - 60.1	P50
Activity/Rest	Insomnia	90	51.4	43.8 - 59.0	P50
Safety/Protection	Risk for Falls	89	50.9	43.2 - 58.4	P50
Nutrition	Excessive Liquid Volume	69	39.4	32.2 - 47.1	P25
Activity/Rest	Fatigue	59	33.7	26.9 - 41.3	P25
Comfort	Chronic pain	59	33.7	26.9 - 41.3	P25
Activity/Rest	Impaired Physical Mobility	57	32.6	25.8 - 40.1	P25
Safety/Protection	Risk for Pressure Ulcer	57	32.6	25.8 - 40.1	P25
Coping/Stress Tolerance	Anxiety	52	29.7	23.2 - 37.2	P25
Nutrition	Overweight	51	29.1	22.7 - 36.6	P25
Elimination and discharge	Constipation	43	24.6	18.5 - 31.8	↓ P25
Health promotion	Riskprone Health Behavior	39	22.3	16.5 - 29.8	↓ P25
Safety/Protection	Risk for Impaired Oral Mucosa	32	18.3	13.1 - 25.0	↓ P25



**Table 4.** Distribution of the 39 defining characteristics and 46 related factors of the nursing diagnoses proposed for hypertensive and diabetic clients. Minas Gerais Brazil, 2016

Nursing Diagnoses	Defining Characteristics / Related Factors	n	%	CI (95%)
Ineffective Health Control	<b>Defining Characteristics</b>			
	1. Difficulty with prescribed regimen	144	82.3	75.6 - 87.5
	2. Failure to include treatment regimen in daily living	173	98.9	95.5 - 99.8
	3. Ineffective choices in daily living for meeting health goals	173	98.9	95.5 - 99.8
	4. Failure to take action to reduce risk factors	163	93.1	88.1 - 96.2
	<b>Related Factors</b>			
	1. Perceived severity	144	82.3	75.6 - 87.5
	2. Insufficient knowledge of therapeutic regimen	144	82.3	75.6 - 87.5
	3. Perceived barrier	158	90.3	84.7 - 94.1
	4. Inadequate number of evidence of action	137	78.3	71.3 - 84.0
Ineffective Peripheral Tissue Perfusion	<b>Defining Characteristics</b>			
	5. Altered skin characteristics	137	78.3	71.3 - 84.0
	6. End pain	92	52.6	44.9 - 60.1
	7. Edema	69	39.4	32.2 - 47.1
	8. Altered motor function	59	33.7	26.9 - 41.3
	<b>Related Factors</b>			
	5. Poor knowledge: disease process/ 6. aggravating factors	158	90.3	84.7 - 94.1
	7. Diabetes mellitus / 8. Hypertension	175	100.0	96.4 - 100
	9. Sedentary lifestyle	130	74.3	67.0 - 80.4
	10. Smoking	17	9.7	5.9 - 15.3
Sedentary Lifestyle	<b>Defining Characteristics</b>			
	9. Lack of physical conditioning	130	74.3	67.0 - 80.4
	10. Daily physical activity lower than recommended	129	73.7	66.4 - 79.9
	<b>Related Factors</b>			
Readiness for Enhanced Coping	11. Poor knowledge	144	82.3	75.6 - 87.5
	12. Insufficient motivation, interest and resources	92	52.6	44.9 - 60.1
Obesity	<b>Defining Characteristics</b>			
	11. Expresses desire to improve the use of emotion-oriented strategies	98	56.0	48.3 - 63.4
	12. Expresses desire to improve the use of problem-oriented strategies	95	54.3	46.6 - 61.8
	<b>Defining Characteristics</b>			
	13. BMI above 30 kg/m <sup>2</sup>	95	54.3	46.6 - 61.8
	<b>Related Factors</b>			
Insomnia	13. Daily physical activity lower than recommended	130	74.3	67.0 - 80.4
	14. Inadequate eating behaviors	92	52.6	44.9 - 60.1
	15. Reduced sleep time	90	51.4	43.8 - 59.0
	<b>Defining Characteristics</b>			
	14. Change in sleep pattern / 15. Dissatisfaction with sleep	90	51.4	43.8 - 59.0
	16. Sleep disorder that have consequences the other day	59	33.7	26.9 - 41.3
	17. Insufficient power	59	33.7	26.9 - 41.3
	<b>Related Factors</b>			
	16. Anxiety	52	29.7	23.2 - 37.2
	17. Depression	12	6.9	3.8 - 11.9
	18. Average physical activity lower than recommended	137	78.3	71.3 - 84.0

**Table 4.** Distribution of the 39 defining characteristics and 46 related factors of the nursing diagnoses proposed for hypertensive and diabetic clients. Minas Gerais Brazil, 2016. (Cont.)

Nursing Diagnoses	Defining Characteristics / Related Factors	n	%	CI (95%)
Excessive Liquid Volume	<b>Defining Characteristics</b>			
	18. Alteração na pressão sanguínea	90	51.4	43.8 - 59.0
	19. Dyspnea	32	18.3	13.1 - 25.0
	20. Edema	69	39.4	32.2 - 47.1
	<b>Related Factors</b>			
	19. Impaired regulatory mechanism	69	39.4	32.2 - 47.1
Fatigue	<b>Defining Characteristics</b>			
	21. Tiredness	59	33.7	26.9 - 41.3
	22. Inability to maintain the usual level of physical activity / 23. Insufficient power	43	24.6	18.5 - 31.8
	24. Non-restorative sleep pattern	59	33.7	26.9 - 41.3
	<b>Related Factors</b>			
	20. Anxiety	52	29.7	23.2 - 37.2
	21. Stressors	92	52.6	44.9 - 60.1
	22. Sleep deprivation	95	54.3	46.6 - 61.8
Chronic pain	<b>Defining Characteristics</b>			
	25. Change in ability to continue previous activities	20	11.4	7.3 - 17.3
	26. Self-reported pain	59	33.7	26.9 - 41.3
	27. Sleep deprivation	95	54.3	46.6 - 61.8
	<b>Related Factors</b>			
	23. Change in sleep pattern	95	54.3	46.6 - 61.8
	24. Fatigue	59	33.7	26.9 - 41.3
	25. Injurious agent	12	6.9	3.8 - 11.9
	26. Age over 50 years	150	85.7	81.9 - 92.9
Impaired Physical Mobility	<b>Defining Characteristics</b>			
	28. Dyspnea on exertion	32	18.3	13.1 - 25.0
	29. Postural Instability	9	5.1	2.5 - 9.8
	30. Reduction in gross and fine motor skills	49	28.0	21.6 - 35.4
	<b>Related Factors</b>			
	27. Pain	59	33.7	26.9 - 41.3
	28. Sedentary lifestyle	130	74.3	67.0 - 80.4
	29. Anxiety	52	29.7	23.2 - 37.2
	30. Decreased muscle strength	9	5.1	2.5 - 9.8
Anxiety	<b>Defining Characteristics</b>			
	31. Insomnia	90	51.4	43.2 - 65.9
	32. Fatigue / 33. Insufficient power / 34. Tiredness	59	33.7	26.9 - 41.3
	35. Increased blood pressure	90	51.4	43.2 - 65.9
	<b>Related Factors</b>			
	31. Stressors	92	52.6	44.9 - 60.1
	32. Unmet needs	90	51.4	43.2 - 65.9
Overweight	<b>Defining Characteristics</b>			
	36. BMI above 25 kg/m <sup>2</sup>	51	29.1	22.7 - 36.6
	<b>Related Factors</b>			
	33. Average physical activity lower than recommended	137	78.3	71.3 - 84.0
	34. Inadequate eating behaviors	92	52.6	44.9 - 60.1
	35. Reduced sleep time	90	51.4	43.2 - 65.9

**Table 4.** Distribution of the 39 defining characteristics and 46 related factors of the nursing diagnoses proposed for hypertensive and diabetic clients. Minas Gerais Brazil, 2016. (Cont.)

Nursing Diagnoses	Defining Characteristics / Related Factors	n	%	CI (95%)
Constipation	<b>Defining Characteristics</b>			
	37. Change in Intestinal Pattern / 35. Reduction: Stool frequency / 36. Stool Volume Reduction	43	24.6	18.5 - 31.8
	<b>Related Factors</b>			
	36. Average physical activity lower than recommended	137	78.3	67.0 - 80.4
	37. Electrolyte imbalance	43	24.6	18.5 - 31.8
	38. Obesity / 39. Inadequate eating habits	95	54.3	46.6 - 61.8
	40. Pharmacological agents	59	33.7	26.9 - 41.3
Riskprone Health Behavior	41. Insufficient Ingestion: Fibers / 42. Inadequate intake: liquids / 43. Decreased gastrointestinal mobility	43	24.6	18.5 - 31.8
	<b>Defining Characteristics</b>			
	38. Failure to take action to prevent health problems	39	22.3	12.6 - 41.6
	39. Failure to achieve optimal sense of control	39	22.3	12.6 - 41.6
	<b>Related Factors</b>			
	44. Substance abuse / 45. Economic disadvantage	30	17.1	12.0 - 23.7
	46. Smoking / 47. Negative attitude related to health care	17	9.7	5.9 - 15.3
	48. Inadequate understanding / 49. Low self-efficacy	32	18.3	13.1 - 25.0

**Table 5.** Distribution of risk diagnoses and the 62 risk factors of hypertensive and diabetic clients. Minas Gerais Brazil, 2016

Nursing Diagnoses	Risk factors	n	%	CI (95%)
Risk for Ineffective Gastrointestinal Perfusion	1. Diabetes mellitus	175	100	96.4 - 100
	2. Female gender	117	66.9	59.3 - 73.7
	3. Smoking	17	9.7	5.9 - 15.3
	4. Age greater than 60 years	102	58.3	50.6 - 65.6
Risk for Ineffective Renal Perfusion	5. Diabetes mellitus / 6. Hypertension	175	100	96.4 - 100
	7. Female gender	117	66.9	59.3 - 73.7
	8. Smoking	17	9.7	5.9 - 15.3
	9. Age greater than 60 years	102	58.3	50.6 - 65.6
Risk for decreased cardiac tissue perfusion	10. Diabetes mellitus/ 11. Hypertension	175	100	96.4 - 100
	12. Obesity	95	54.3	46.6 - 61.8
	13. Sedentary lifestyle	130	74.3	67.0 - 80.4
	14. Smoking	17	9.7	5.9 - 15.3
	15. Cardiovascular surgery	19	10.8	6.8 - 16.7
Risk for Ineffective Peripheral Tissue Perfusion	16. Insufficient knowledge of the disease process	144	82.3	75.6 - 87.5
	17. Diabetes mellitus/18. Hypertension	175	100	96.4 - 100
	19. Sedentary lifestyle	130	74.3	67.0 - 80.4
	20. Smoking	17	9.7	5.9 - 15.3
Risk for Impaired Cardiovascular Function	21. Diabetes mellitus / 22. Hypertension	175	100	96.4 - 100
	23. Sedentary lifestyle	130	74.3	67.0 - 80.4
	24. History of cardiovascular disease	35	20.0	14.5 - 26.9
	25. Family history of cardiovascular disease	92	52.6	44.9 - 60.1
	26. Age greater than or equal to 66 years	78	44.6	37.1 - 52.3
	27. Obesity	95	54.3	46.6 - 61.8
	28. Smoking	17	9.7	5.9 - 15.3

**Table 5.** Distribution of risk diagnoses and the 62 risk factors of hypertensive and diabetic clients. Minas Gerais Brazil, 2016. (Cont.)

Nursing Diagnoses	Risk factors	n	%	CI (95%)
Risk for Unstable Blood Glucose Levels	29. Average physical activity lower than recommended	137	78.3	71.3 - 84.0
	30. Excessive weight gain /	144	82.3	75.6 - 87.5
	31. Insufficient knowledge of disease control	144	82.3	75.6 - 87.5
	32. Ineffective drug control	158	90.3	84.7 - 94.1
	33. Insufficient diabetes control	162	92.6	87.4 - 95.8
	34. Lack of acceptance of diagnosis	12	6.9	3.8 - 11.9
Risk for Constipation	35. Average physical activity lower than recommended	137	78.3	71.3 - 84.0
	36. Sedentary lifestyle	130	74.3	67.0 - 80.4
	37. Pharmacological agents	59	33.7	26.9 - 41.3
Risk for Activity Intolerance	38. Lack of conditioning	130	74.3	67.0 - 80.4
	39. Circulatory problem	137	78.3	71.3 - 84.0
Risk for Impaired Skin Integrity	40. Age extremes	78	44.6	37.1 - 52.3
	41. Inadequate moisture / 42. Change in skin turgor	92	52.6	44.9 - 60.1
	43. Moisture	78	44.6	37.1 - 52.3
	44. Edema	69	39.4	32.2 - 47.1
Risk for Falls	45. Age greater than or equal to 66 years	78	44.6	37.1 - 52.3
	46. Living alone	9	5.1	2.5 - 9.8
	47. Use of auxiliary devices	12	6.9	3.8 - 11.9
	48. Alcohol consumption	30	17.1	12.0 - 23.7
	49. Change in blood glucose level	89	50.9	43.2 - 58.4
Risk for Impaired Oral Mucosa	50. Inadequate Oral Hygiene	24	13.7	9.2 - 19.9
	51. Smoking	17	9.7	5.9 - 15.3
	52. Alcohol consumption	30	17.1	12.0 - 23.7
Risk for Pressure Ulcer	53. Self-care deficit	15	8.6	5.9 - 14.0
	54. Cardiovascular disease	35	20.0	14.5 - 26.9
	55. Edema	69	39.4	32.2 - 47.1
	56. Age extremes / 57. Skin moisture	78	44.6	37.1 - 52.3
	58. Weight extremes	95	54.3	46.6 - 61.8
	59. Female gender	117	66.9	59.3 - 73.7
	60. Dry skin	92	52.6	44.9 - 60.1
	61. Decreased mobility	57	32.6	25.8 - 40.1
	62. Smoking	17	9.7	5.9 - 15.3

## Discussion

A person's life habits, beliefs and values characterize the way the individual identifies themselves within the social world. Such attitudes are corroborated by socioeconomic and political factors that interfere with the environment, behavior and biology of these individuals, influencing the health-illness process and, consequently, their disposition, safety, independence and quality of life.<sup>(1)</sup> These environmental/cultural/social/historical determinants influence inexorably in the daily lives of people with chronic diseases, such as hypertensive

and diabetic patients.<sup>(1,5)</sup> Therefore, they need care and follow-up provided by the health services in order to have a better quality of life.

The analysis of the data revealed that the majority of the interviewed population were female, married, had some religious practice, incomplete elementary education and average age of 62.1 years, did not live alone and had retirement or pension as the main source of income. This reflects the reality of low- and middle-income populations around the world as they are most affected by chronic diseases and their complications. The

percentage of elderly people living with their children continues to be high, even with the increase in longevity, which corroborates the research carried out with elderly people assisted by the Family Health Strategy of a municipality in Minas Gerais, Brazil.<sup>(5)</sup> In relation to ethnicity, the white color predominated, as opposed to other studies that indicate a higher prevalence of chronic auto-referred diseases in black people when compared to white.<sup>(6)</sup> The baseline diseases studied, hypertension and diabetes mellitus, had a significant mean time of diagnosis, being 17.8 years for hypertension and 10.8 years for diabetes. This data shows that in the majority of clients interviewed, hypertension evolved with a prognosis for diabetes. From the epidemiological point of view, hypertension is considered three times more frequent in diabetics than in the general population. In type 2 diabetics, about 40% have already been hypertensive at the time of diagnosis.<sup>(1,5,6)</sup>

However, despite the respective periods with the diseases, a considerable number of participants presented deficient knowledge about the meaning of the diseases, their complications, prognosis and treatment, mainly related to the use of insulin. The lack of information becomes an obstacle to user empowerment and to adherence to treatment. Hypertensive and diabetic patients are known to have chronic conditions that require continuous nursing care in order to prevent complications from diseases. Health care priorities are defined in an equitable manner, according to the degree of risk they present, and high risk, observed in 71.4% of the participants, corresponds to the population that demands greater attention. In view of the above, nurses should improve their practices, based on scientific evidence for decision making, which requires that nursing care is based on nursing diagnoses in order to prevent complications that affect quality of life of the hypertensive and diabetic individual in a general manner. This study identified a total of 26 different nursing diagnoses, 13 problem-focused diagnoses, 12 risk diagnoses and one diagnosis of health promotion, presenting an average of 16

diagnoses per client, 24 defining characteristics, 28 related factors and 38 risk factors.

The quantity and multiplicity of NDs detected in this study indicate that nursing professionals need to develop individualized interventions, always aiming at the humanization of health actions, the respect for the dignity and the comprehensiveness of the citizen, also assuming a dialogical interaction, respecting the needs and fears of expressing the aspirations lived by each person. This profile of nursing diagnoses was relevant since, in the planning of nursing care, the initial care to the problem-focused diagnoses should be prioritized. These diagnoses are the human responses to health conditions and preventive interventions must be implemented jointly for the risk diagnoses.<sup>(10,11)</sup> Five risk diagnoses were present in all hypertensive and diabetic subjects interviewed ("Risk for Ineffective Gastrointestinal Perfusion", "Risk for Ineffective Renal Perfusion", "Risk for Decreased Cardiac Tissue Perfusion", "Risk for Ineffective Peripheral Tissue Perfusion", "Risk for Impaired Cardiovascular Function"), and other five diagnoses ("Risk for Unstable Blood Glucose Levels", "Risk for Constipation", "Risk for Activity Intolerance", "Risk for Impaired Skin Integrity" and "Risk for Falls") score above the 50th percentile. Given this finding, nursing care planning should be performed in a way to make a control of risks, with the goal of prioritizing safety. Research performed at the PHC in Madrid, Spain, showed that clients with CNCs had better indicators of control of their condition in health units where nurses used the nursing process compared to clients accompanied by nurses who do not use NP.<sup>(11)</sup>

With regard to nursing diagnoses, studies involving diagnoses profile in specific clinical circumstances and those related to validation and diagnostic accuracy have helped in the process of diagnostic inference, making clinical practice more safe and effective.<sup>(7)</sup> In this research, the defining characteristics "Failure to include treatment regimen in daily living" and "Ineffective choices in daily living for meeting health goals" of

the nursing diagnosis “Ineffective Health Control” were the most observed among participants. Data from the literature show that long-term or chronic treatments generally have less adherence, since therapeutic regimens require discipline and a great commitment of the client who, at times, needs to modify their habits of life to fulfill their treatment.<sup>(1,5)</sup> For this reason, hypertensive and diabetic patients must have adequate answers to their doubts regarding the management of chronic diseases, such as care related to specific use of medications, the search for adequate diet, physical activity, among others. This will provide greater credibility around health professionals and therefore provide customers with real and individualized parameters for their self-care.<sup>(4,5)</sup>

The diagnosis “Ineffective Peripheral Tissue Perfusion”, referring to the reduction of blood circulation to the periphery, which can compromise health<sup>(8)</sup> due to “altered skin characteristics”, score above the 75th percentile. Poor knowledge about the disease process, sedentary lifestyle and self-reported smoking are relevant variables that influenced ineffective peripheral perfusion, corroborating with the literature.<sup>(1,7)</sup> The diagnostic title “Sedentary Lifestyle”, evidenced in the majority of the participants, refers to a habit of life characterized by a low level of physical activity.<sup>(8)</sup> In a study on the review of the nursing diagnosis “Sedentary lifestyle” in hypertensive patients, the defining characteristics of “Choice of a daily routine without physical exercises” and “Lack of physical conditioning” were the main ones of this diagnosis, according to a conceptual analysis performed by the authors.<sup>(26)</sup> Many studies have shown that lifestyle modification in people with chronic conditions, besides contributing to the improvement of indicators of clinical control of diseases, significantly reduces drug consumption and, consequently, financial costs with drugs.<sup>(1,4,6)</sup>

The nursing diagnosis with potential for health promotion “Readiness for enhanced coping”, which refers to the pattern of behavioral and cognitive efforts to address demands for well-being and that can be strengthened <sup>(8)</sup> was observed in 56.0%

of the studied public. 60.57% of respondents are optimistic about their treatment and although 74.3% are sedentary, 82.8% believe that physical exercise is paramount for their health and for the control of chronic diseases diagnosed. This is contrary to the literature, since this diagnosis has not been verified in other studies with hypertensive and/or diabetic patients. In a considerable number of patients (54.2%), the diagnosis “Obesity” was identified, a condition in which the individual accumulates abnormal or excessive fat for their age and sex, which exceeds overweight.<sup>(8)</sup> Obesity has been considered a serious public health problem, reaching ever higher levels among the elderly in Brazil and in the world.<sup>(1,5)</sup> Faced with this reality, nurses should encourage changes to promote a healthier lifestyle, including helping users overcome obstacles related to dietary changes, regular physical exercise and use of community support devices.

The diagnosis “Insomnia”, considered as a disturbance in the quantity and quality of sleep that impairs functioning,<sup>(8)</sup> was present in 51.4% of the participants. The defining characteristics associated to the definition of this diagnosis include “dissatisfaction with sleep”, “anxiety” and “sedentary lifestyle”. Impaired sleep increases blood pressure, increases appetite and may compromise insulin sensitivity, as well as being associated with the incidence of diabetes.<sup>(1,2)</sup> Insomnia is more frequent from middle age, as in the population of this study. This fact has been proven by other studies.<sup>(5,10)</sup>

In view of the above, when providing care for chronically ill users, nurses should adopt a flexible, individualized approach adjusted to the different stages of the disease, to the needs and interests of each individual, and appropriate to the cultural environment where care is provided. One of the most important aspects for the control of chronic diseases is the therapeutic adherence, since non-compliance or lack of adherence to treatment is considered the main cause of difficulty in the control of chronic diseases.<sup>(1,5)</sup> A research has showed that nurses who use the nursing process



in PHC presented greater coverage in all health promotion services and risk and injury prevention, better indicators of control of the patient's health condition and consequently less expenditures on the consumption of medicines, when compared to nurses who planned and executed their interventions without the aid of the nursing process.<sup>(11)</sup>

These results allow concluding that establishing the profile of hypertensive and diabetic people assisted in PHC is necessary to propose care actions specific to this clientele, considering their limitations and possibilities in coping with the disease. Health education actions carried out in the basic health units environment and focused on the profile of this clientele are crucial and may favor changes in behaviors in the hypertensive and diabetic person. In the present study, 26 NDs were identified, according to NANDA-I, and 16 diagnoses above the 50th percentile were found and discussed in greater depth. The largest number of NDs was identified in the domain activity/rest. Risk diagnoses had an expressive frequency, corroborating the risk classification of these users in the Hiperdia program, in which the great majority of the participants in this study were considered to be at high risk for the development of cardiovascular diseases and complications associated with hypertension and diabetes.

The objective outlined for this study was reached; however, a limiting factor in this study was the fact that it was performed only with the research and diagnosis stages of the nursing process. Thus, further studies that contemplate all stages of the nursing process should be carried out aiming at developing accuracy, validation, results and intervention studies involving the main diagnoses found in this study in order to confirm the findings and cooperate with the choice of the defining characteristics and related factors that actually represent the conditions of the hypertensive and diabetic client.

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