

Nursing diagnoses in diabetic patients: an integrative review

Diagnósticos de enfermagem em pacientes diabéticos: revisão integrativa

Diagnósticos de enfermería en pacientes diabéticos: revisión integradora

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ABSTRACT

Objective: to identify nursing diagnoses in patients with diabetes mellitus, by the NANDA International, Inc. taxonomy. **Method:** this integrative review was conducted in May 2020 in the CINAHL, Scopus, PUBMED, LILACS, BDENF and Scientific Electronic Library Online (SciELO) databases, resulting in a selection of scientific articles on nursing diagnoses in adult patients with type 1 and 2 diabetes mellitus, published between 2004 and 2020. **Results:** most of the 21 articles selected were Brazilian, descriptive and cross-sectional. Sixty different nursing diagnoses were identified, of which 43 focused on the problem, 15 on the risk, and two on health promotion. **Conclusion:** the predominant areas were Health Promotion, Nutrition, Elimination and Exchange, Activity/Rest, Coping and Stress Tolerance, and Safety/Protection. Evidence from nursing diagnoses in diabetic patients guides nursing care and informs health personnel's clinical and scientific reasoning, thus making for more systematic care.

Descriptors: Diabetes Mellitus; Nursing; Nursing Diagnosis; Standardized Nursing Terminology.

RESUMO

Objetivo: identificar os diagnósticos de enfermagem segundo a taxonomia NANDA Internacional, Inc. evidenciados em pacientes com diabetes mellitus. **Método:** trata-se de uma revisão integrativa da literatura realizada no mês de maio de 2020, nas bases CINAHL, Scopus, PUBMED, LILACS, BDENF e Biblioteca Eletrônica Científica Online SciELO. Foram selecionados artigos científicos que abordavam diagnósticos de enfermagem em pacientes adultos com diabetes mellitus tipo 1 e 2, no recorte temporal de 2004 a 2020. **Resultados:** selecionados 21 artigos, sendo a maioria brasileiros, do tipo descritivo e transversal. Encontrou-se 60 diferentes diagnósticos de enfermagem, destes, 43 eram com foco no problema, 15 de risco e dois de promoção da saúde. **Conclusão:** os domínios predominantes foram: Promoção da Saúde, Nutrição, Eliminação e Troca, Atividade/repouso, Enfrentamento/Tolerância ao Estresse e Segurança/proteção. As evidências de diagnósticos de enfermagem norteiam o cuidado de enfermagem, subsidiam o raciocínio clínico e científico dos profissionais potencializando, assim, a sistematização da assistência.

Descritores: Diabetes Mellitus; Enfermagem; Diagnóstico de Enfermagem; Terminologia Padronizada em Enfermagem.

RESUMEN

Objetivo: identificar diagnósticos de enfermería en pacientes con diabetes mellitus, por la taxonomía NANDA International, Inc. **Método:** esta revisión integradora se realizó en mayo de 2020 en las bases de datos CINAHL, Scopus, PUBMED, LILACS, BDENF y Scientific Electronic Library Online (SciELO), dando como resultado una selección de artículos científicos sobre diagnósticos de enfermería en pacientes adultos con diabetes tipo 1 y 2 mellitus, publicados entre 2004 y 2020. **Resultados:** la mayoría de los 21 artículos seleccionados fueron brasileños, descriptivos y transversales. Se identificaron sesenta diagnósticos de enfermería diferentes, de los cuales 43 se enfocaron en el problema, 15 en el riesgo y dos en la promoción de la salud. **Conclusión:** las áreas predominantes fueron Promoción de la Salud, Nutrición, Eliminación e Intercambio, Actividad / Descanso, Afrontamiento y Tolerancia al Estrés y Seguridad / Protección. La evidencia de los diagnósticos de enfermería en pacientes diabéticos orienta la atención de enfermería e informa el razonamiento clínico y científico del personal de salud, lo que hace que la atención sea más sistemática.

Descriptores: Diabetes Mellitus; Enfermería, Diagnóstico de Enfermería; Terminología Normalizada de Enfermería.

INTRODUCTION

Diabetes Mellitus (DM) is a complex chronic metabolic disorder characterized by hyperglycemia and impaired and/or insufficient insulin release. In the long term, hyperglycemia is associated with microvascular complications that lead to eye disorders, kidney and nerve damage, as well as an increased risk of cardiovascular disease¹.

DM is one of the main causes of mortality and morbidity among the population, presenting complications that can cause losses in the quality of life of the patient^{1,2}. Thus, the Guidelines of the American Diabetes Association (ADA) highlight the importance of patient-centered care, according to individual characteristics, needs and preferences,

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emphasizing that care guarantees the values of the patient and guides all clinical decisions¹. In this scenario, nurses face the challenge of offering assistance to individuals, family and community in an individualized manner, through direct or indirect care, contributing to adherence to glycemic control measures³.

Nurses should consider all dimensions of the person and, therefore, it is important to use scientifically validated methods and techniques for the planning of care, among which the Nursing Care Systematization (NCS) and the Nursing Process (NP) stand out, with the use of nursing diagnoses (NDs) and standardized nursing languages such as NANDA *International*, Inc. (NANDA-I) Taxonomy II⁴. In order to establish the presence of an ND, nurses analyze the needs or problems based on a clinical judgment about the real or potential human responses of the individual, family or community to which they will direct nursing care⁴.

In this way, the identification of a set of NDs, using the NANDA-I taxonomy, can favor the direction of nursing care to patients in different health contexts, assisting them in decision-making, giving support for the elaboration of the individualized care plan that allows for the achievement of the best outcomes, documentation of processes, patient safety and lower health costs⁴.

Thus, considering the need to gather, synthesize and facilitate access to the main nursing research studies conducted on NDs and diabetes mellitus that can contribute to targeted and specialized care, this study aims to identify NDs, according to the NANDA-I taxonomy for patients with DM.

METHOD

This is an integrative literature review. The integrative review determines the current knowledge on a specific theme, since it is conducted in order to identify, analyze and synthesize independent results on the same subject, contributing, among other factors, to the evidence-based practice and providing quality of care provided to the patient⁵.

For this study, the choice of the theme and definition of the study question took place first: Which nursing diagnoses, according to NANDA-I taxonomy II, are evidenced in diabetic patients? The second stage consisted of establishing the inclusion and exclusion criteria for the studies. In the third stage, the sample was selected by searching the databases and, in the fourth stage, the information extracted from the selected articles was summarized. The fifth stage consisted of evaluating the studies, interpreting and discussing the results; and the sixth stage consisted of presenting the review and synthesis of knowledge⁵.

The search was carried out in May 2020, with articles selected through online access using the Scientific Electronic Library Online (SciELO) digital library, the Virtual Health Library (*Biblioteca Virtual em Saúde*, BVS) for the Latin American and Caribbean Literature in Health Sciences (*Literatura Latino-Americana e do Caribe em Ciências da Saúde*, LILACS) and Nursing (*Base de Dados em Enfermagem*, BDEnf) Databases, in addition to the following health databases: Scopus, CINAHL (Cumulative Index to Nursing and Allied Health Literature) and PUBMED available on the Journals portal of the Coordination for the Improvement of Higher Level Personnel (*Coordenação de Aperfeiçoamento de Pessoal de Nível Superior*, CAPES) obtained through the Federated Academic Community (*Comunidade Acadêmica Federada*, CAFE).

The inclusion criteria were as follows: primary research article; addressing NDs from NANDA-I taxonomy II in individuals with clinical diagnosis of type 1 or type 2 diabetes mellitus; published in Portuguese, English or Spanish, from 2004 to 2020, a period after publication of NANDA-I taxonomy II, which occurred in 2002. The exclusion criterion included studies with individuals under 18 years old.

Date filters (2004 to 2020) were used in all the searches and the keywords were controlled with the Boolean operator *AND*. In the LILACS, BDEnf and SciELO databases, the following Health Science Descriptors (*Descritores em Ciências da Saúde*, DeSC) used were: *Diagnóstico de Enfermagem AND Diabetes Mellitus AND Enfermagem*. In the Scopus, CINAHL and PUBMED databases, the following Medical Subject Headings (MeSH) used were: Nursing diagnosis AND Diabetes mellitus AND Nursing. The crossing of the controlled keywords was performed in a single combination directly in the selected databases.

For better understanding and transparency in the selection method, it was decided to present the flowchart of the scientific articles through the guide of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)⁶. The first phase consisted of searching the databases, totaling 920 articles. In the second phase, repeated articles were excluded. In the third, the titles and abstracts were read, with 324 articles being selected. In the last phase of the construction, an exploratory, selective and analytical reading of all the studies was carried out and excerpts that answered the guiding question were stratified, totaling 21 articles that compose the sample of this study. As a way to broaden the literature search for articles that could address the theme, the references present in the 21 selected articles were reviewed by the authors, with no other articles found that could be part of the *corpus* of this review.

To extract data from the 21 selected articles, an instrument designed to synthesize and organize the findings was used, with two independent reviewers conducting the search and selection of articles and, in case of disagreement, a third reviewer was consulted.

Regarding their level of evidence, the articles were classified as follows: 1) evidence from systematic review or meta-analysis of all randomized controlled clinical trials or from clinical guidelines based on systematic reviews of randomized controlled clinical trials; 2) evidence from at least one well-designed randomized controlled clinical trial; 3) evidence from well-designed clinical trials without randomization; 4) evidence from well-designed cohort and case-control studies; 5) evidence from systematic review of descriptive and qualitative studies; 6) evidence from a single descriptive or qualitative study; and 7) evidence from the opinion of authorities and/or the report of expert committees⁷. The article selection process is described in Figure 1, which shows the process in a flow diagram divided into four phases.

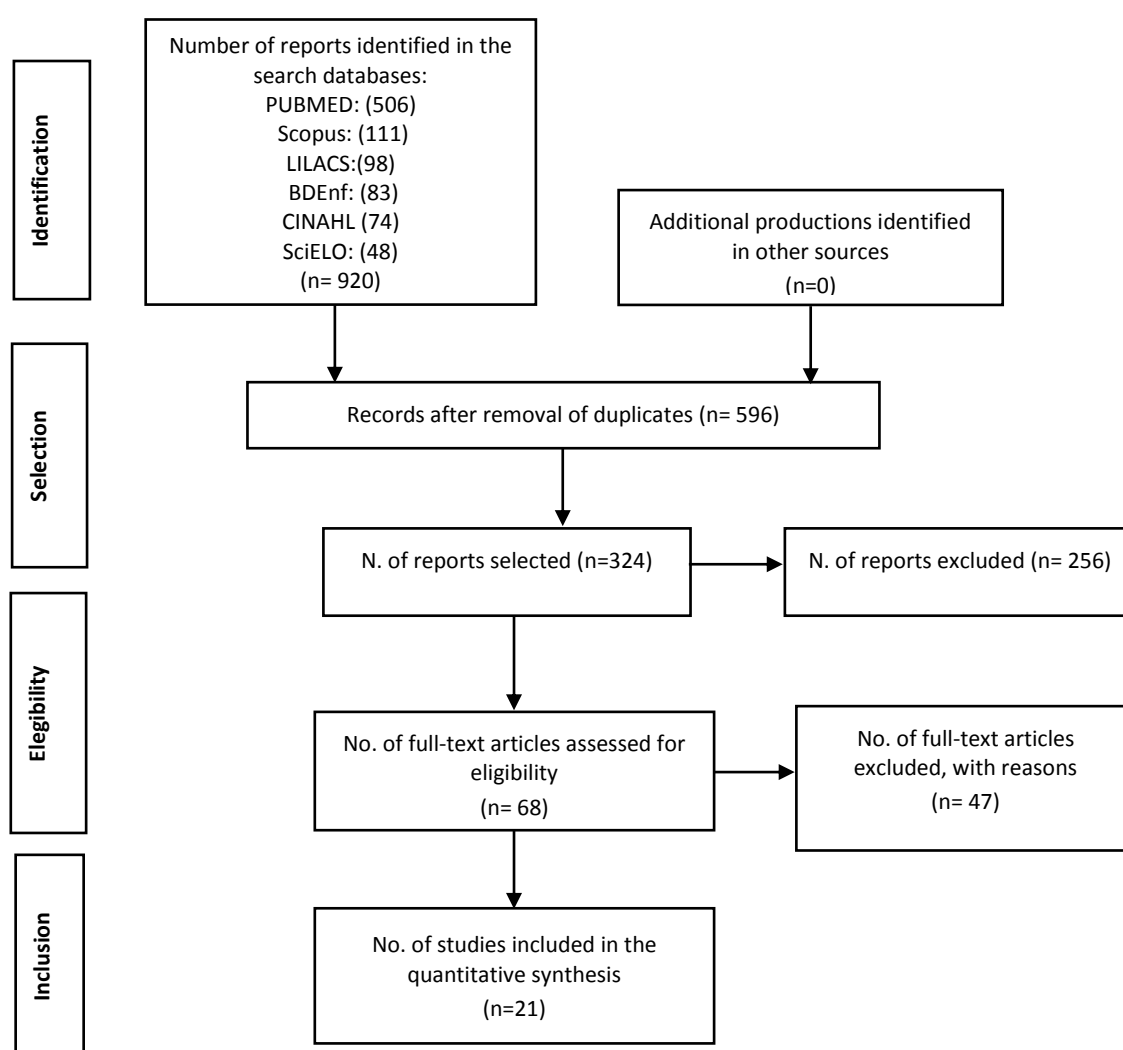


FIGURE 1: Diagram for the selection of the studies according to the PRISMA Flow Diagram⁶. São Luís, MA, Brazil, 2020.

RESULTS

Data are presented in a descriptive way, aiming to gather and organize the knowledge about the investigated theme. Figure 2 present an overview of the articles selected for the study:

Study Objective/Year of Publication	n	Type of study	Level of Evidence	Locus
To report Nursing Care to a patient with type 2 Diabetes Mellitus, using the NANDA taxonomy for the construction of Nursing diagnoses ⁸ /2006	1	Case study	6	Brazil
To identify the nursing diagnoses of diabetic patients using insulin in the light of Orem's Nursing Self-Care Theory and NANDA Taxonomy II ⁹ /2008	50	Exploratory and descriptive: multiple case study	6	Brazil
To characterize some basic conditioning factors of self-care and to analyze the profile of the NANDA NDs identified with people with diabetes, from a data collection guide based on Orem's theory ¹⁰ /2008	7	Descriptive	6	Brazil
To identify the NDs in people with DM, according to Orem's conceptual model ¹¹ /2009	31	Multiple cases, descriptive	6	Brazil
- To describe the nursing diagnoses in people with DM who had a diagnosis of Impaired urinary elimination; - To analyze the related factors and defining characteristics of the nursing diagnosis of Impaired urinary elimination, in the light of the nursing interventions ¹² /2010	31	Exploratory by means of a multiple case study	6	Brazil
To identify the accuracy of the defining characteristics of the ineffective family management diagnosis of the therapeutic regimen and to analyze the relationship of the demographic and socioeconomic factors with non-adherence to the therapeutic regimen in patients with DM ¹³ /2011	68	Cross-sectional	6	Brazil
To validate the nursing interventions proposed by the <i>Nursing Interventions Classification</i> for the following NDs: Impaired skin integrity, Deficient knowledge and Ineffective management of the therapeutic regimen prevalent in people with DM ¹⁴ /2011	21	Descriptive and exploratory	6	Brazil
To present a case of an older adult, diagnosed with diabetes, moderate dependence, who receives home care by nursing professionals, with determination of the NDs according to Gordon's functional standards and NANDA-I taxonomy ¹⁵ /2011	1	Case study	6	Spain
To identify the Readiness for management ND of the therapeutic regimen among people with DM ¹⁶ /2012	579	Cross-sectional	6	Brazil
To identify the relevance of terms in the NANDA-I taxonomies, Nursing Interventions Classification (NIC) and Nursing Outcomes Classification (NOC) used in adult diabetic patients ¹⁷ /2012	4	Action-Research	6	USA
To describe the follow-up of a patient with diabetes with implementation of the care plan from the NDs according to the NANDA taxonomy ¹⁸ /2012	1	Case study	6	Spain
To verify the association of the demographic and clinical characteristics with the NDs defined during the outpatient nursing consultation of a general hospital in patients with DM ¹⁹ /2012	237	Cross-sectional	6	Brazil
To identify the accuracy of the nursing interventions based on the NDs in patients who scheduled appointments in the Diabetes Education Program, in an outpatient clinic of a university hospital, relating them to the socio-demographic characteristics and to the comorbidities ²⁰ /2013	136	Cross-sectional	6	Brazil
To identify the NDs according to NANDA taxonomy II using nursing records associated with the outpatient treatment of diabetics ²¹ /2013	35	Exploratory, descriptive, retrospective	6	Brazil
To identify the most prevalent Nursing Diagnoses in hypertensive and/or diabetic individuals from a Family Health Unit in Minas Gerais, according to Orem's model ²² /2014	30	Descriptive	6	Brazil
To present a case study of a diabetic patient, applying the Nursing Care Process using the NANDA-I Nursing Diagnoses Taxonomy, Nursing Outcomes Classification (NOC), Nursing Interventions Classification (NIC) and Orem's Theory ²³ /2017	1	Case study	6	Colombia
To analyze the most frequent NDs in the care of institutionalized diabetic older adult women ²⁴ /2017	12	Descriptive	6	Brazil
To identify the profile of the NDs in people with hypertension and diabetes using primary care ²⁵ /2017	175	Descriptive and exploratory	6	Brazil
To identify the lifestyle of older adults living with type 2 Diabetes <i>mellitus</i> and to characterize the nursing diagnoses, using a measurement instrument ²⁶ /2019	35	Descriptive, cross-sectional	6	Mexico
To evaluate the nursing diagnosis of Syndrome of the frail older adult in older adults with chronic diseases in a health district in the Federal District ²⁷ /2019	78	Descriptive and cross-sectional	6	Brazil
To validate the risk for unstable blood glucose level ND for adult patients with type 1 and 2 diabetes ²⁸ /2020	22	Methodological	6	Brazil

FIGURE 2: Articles selected for review according to objective(s), number of study participant(s), year of publication (2006-2020), type of study, level of evidence and place of data collection, in chronological order of publication. São Luís, MA, Brazil, 2020.

Regarding the databases in which the articles were selected, PUBMED presented the largest number of indexed articles, followed by Scopus and LILACS. As for the place of study, 16 studies were carried out in Brazil, one in Spain, one in the United States, one in Mexico and one in Colombia. Regarding the year of publication, there was a greater number of articles published in 2012, totaling four. As for the methodology, seven studies were descriptive and five were cross-sectional. As for the level of scientific evidence, 100% were level 6, meaning moderate scientific evidence.

According to the analysis of the 21 studies, 60 different NDs were found; of these, 43 were focused on the problem, 15 on the risk, and two on health promotion. It can be seen that the dominant domains were the following: Health promotion (Domain 1), Nutrition (Domain 2), Elimination and exchange (Domain 3), Activity/rest (Domain 4), Coping and stress tolerance (Domain 9) and Safety/protection (Domain 11). The most relevant NDs are shown in Table 1 and were grouped into categories according to the NANDA-I domains (2018-2020)⁴ in a sequential manner.

TABLE 1: Nursing diagnoses in patients with Diabetes Mellitus found in the selected articles, according to NANDA-I Taxonomy II (2018-2020) (n=21). São Luís, MA, Brazil, 2020.

Nursing diagnosis	N	%
Domain 01: Health promotion		
00078 Ineffective health management	13	61.9
00162 Readiness for enhanced health management	9	42.8
00168 Sedentary lifestyle	7	33.3
00080 Ineffective family health management	7	33.3
00188 Risk-prone health behavior	3	14.2
Domain 02: Nutrition		
00232 Obesity*	12	57.1
00179 Risk for unstable blood glucose level	8	38.0
00025 Risk for imbalanced fluid volume	3	14.2
Domain 03: Elimination and exchange		
00016 Impaired urinary elimination	4	19.0
00019 Urge urinary incontinence	3	14.2
Domain 04: Activity/rest		
00085 Impaired physical mobility	7	33.3
00093 Fatigue	6	28.5
00198 Disturbed sleep pattern	6	28.5
00109 Dressing self-care deficit	6	28.5
00108 Bathing self-care deficit	6	28.5
00098 Impaired home maintenance	4	19.0
00102 Feeding self-care deficit	3	14.2
00204 Ineffective peripheral tissue perfusion	3	14.2
00200 Risk for decreased cardiac tissue perfusion	2	9.5
00095 Insomnia	2	9.5
00193 Self-neglect	2	9.5
Domain 05: Perception/cognition		
00126 Deficient knowledge	8	38.0
Domain 06: Self-perception		
00119 Chronic low self-esteem	2	9.5
Domain 08: Sexuality		
00059 Sexual dysfunction	6	28.5
00065 Ineffective sexuality pattern	3	14.2
Domain 09: Coping/stress tolerance		
00074 Compromised family coping	4	19.0
00146 Anxiety	4	19.0
00148 Fear	2	9.5
Domain 11: Safety/protection		
00004 Risk for infection	7	33.3
00046 Impaired skin integrity	7	33.3
00155 Risk for falls	7	33.3
00035 Risk for injury	6	28.5
00047 Risk for impaired skin integrity	6	28.5
00086 Risk for peripheral neurovascular dysfunction	4	19.0
00044 Impaired tissue integrity	4	19.0
Domain 12: Comfort		
00132 Acute pain	8	38.0
00133 Chronic pain	8	38.0

*Also considered ND 00001 – Imbalanced nutrition: more than body requirements, which was removed from NANDA-I taxonomy II, 2015-2017 and replaced by obesity. **Source:** Research Data, 2020.

DISCUSSION

The identification of the NDs in diabetic patients is one of the stages of the nursing process, being one of the most important in the systematization of care, as it directs the following stages of interventions, goals and outcomes. Regarding the domains found in the study, great diversity was observed, covering 10 of the 13 domains present in the NANDA-I taxonomy⁴.

Among the diagnoses referring to the Nutrition domain, three main ones stood out: imbalanced nutrition: more than body requirements/obesity, risk for unstable blood glucose level, and risk for imbalanced fluid volume. It was observed in the studies^{8,13,20} that one of the reasons that prevent adherence to the diet recommended for diabetics is the difficulty in modifying eating habits and adapting to the new dietary pattern for the whole family, in addition to the economic, social and cultural reasons involved in this context.

The other diagnosis related to the patient's weight gain is the sedentary lifestyle BD (belonging to the Health promotion Domain), which reasserts that the sedentary lifestyle associated with inadequate diet and weight gain in the world population have contributed to the increase in the number of DM cases, mainly type 2^{21,25}. In this sense, nurses should encourage lifestyle changes in people with chronic conditions, with health promotion actions such as healthy eating practices and regular physical activity, which can contribute to the improvement of the clinical control indicators of DM^{10,25}.

The risk for unstable blood glucose level ND was also identified^{19-26,28}, which is one of the main nursing diagnoses to be considered in diabetic patients in order to avoid complications resulting from glycemic changes. Regarding the risk factors for unstable blood glucose, changes were found in glycated hemoglobin levels, body mass index > 31 kg/m², previous history of hypoglycemia, cognitive deficit/dementia, cardiovascular autonomic neuropathy, comorbidities and weight loss, which correspond to risk factors described in the NANDA-I taxonomy^{4,29}.

In recent years, the development of new technologies for blood glucose monitoring has helped patients to control glycemic changes, avoiding the symptoms and complications resulting from hyperglycemia and/or hypoglycemia. On the other hand, it is essential that nurses have knowledge, develop skills and act in the education of patients for the correct use of the technologies available to diabetic patients².

Regarding the Health promotion domain, the NDs identified were ineffective health management^{8-12,17,19-23, 25,26}, readiness for enhanced health management^{8-12,17,19,20,22} and ineffective family health management^{9,12,17,21,22}. Health promotion is an activity inherent to nursing and one of the ways of producing health, at the individual and collective level, which aims to meet the social health needs and enables the patient to improve quality of health, making it possible to minimize the harms caused by the disease³⁰.

The selected studies address the need for health promotion, especially in outpatient nursing consultations in primary care. Regarding the ineffective family health management^{9,12,17,21,22} ND, it is emphasized that the difficulty in adhering to the treatment and the management of self-care are common problems in the context of diabetic patients, due to the intensity and frequency of the treatment, which is often exhausting for the patient and for the family. In order to achieve positive results, health professionals should list priorities, motivate participation, observe adherence to self-care measures and congratulate the patient's achievements and commitment during the treatment³.

The authors point out the ability of DM to cause several changes in patients' health, affecting their daily lives, especially those who use insulin and have more than 10 years of illness, which reinforces the need for guidelines on the disease, prevention of complications and self-care³¹. Encouraging healthy practices, controlling the risk factors associated with diabetes, can decrease the incidence of the disease and its complications, demonstrating the important role of nursing in health education and in the implementation of preventive measures.

However, it is necessary to consider that knowledge about the pathology does not always lead to a change in attitude in individuals with diabetes. Thus, it is necessary that nurses take an approach in order to stimulate patient's autonomy and empowerment, in addition to considering the psycho-cultural factors, such as the expression of feelings, for a greater identification and overcoming of the difficulties that the treatment imposes on the daily life of the diabetic patient. The empowerment approach can help the patient to solve daily problems and influence the adherence to healthy behavior as it increases their autonomy and their ability to take care of their own health³².

The Safety/protection domain has considerable relevance among diabetic people, since this population is more vulnerable to physical and immunological injuries, related to decreased sensitivity³³. In this domain, mainly risk NDs were found, such as those linked to impaired skin integrity^{8,10,11,19,18,24}, injury^{10,11,21,23}, infection^{9-12,19,20,24}, peripheral neurovascular dysfunction^{9,11,12,21} and falls^{10,15,18,22,24-26}.

Risk factors for falls include environmental, cognitive and physiological factors, in addition to the risk of the effects of medications⁴. Falls can cause loss of autonomy, psychological harms, activity restrictions, fractures and increased health costs. Thus, in view of the many repercussions on the patient's life, nurses should assess the presence of risk factors for the occurrence of falls, and the use of the NANDA-I taxonomy facilitates the identification and registration of these factors, directing interventions, thus avoiding physical harms and compromised health in diabetic patients³⁴.

The risks for injury, peripheral neurovascular dysfunction and impaired skin integrity are associated with the presence of diabetic neuropathy, one of the complications of diabetes, especially when there is no strict control of blood glucose. In this condition, individuals lose the sensitivity of the extremities, such as touch, thermal sensation and pain sensation, leaving patients susceptible to serious injuries, including amputations of limbs³⁵. It is important that the professionals evaluate the patients' lower limbs and mainly advise the patients on being attentive to the early diagnosis of the disease.

In the studies identified, NDs that affect activities of daily living (ADLs) were also described, such as dressing^{11,12,22,24,27}, bathing^{9,11,15,22,24,27} and feeding^{11,15,24} self-care deficits. The diagnosis of diabetes is associated with an increased risk of inability to perform ADLs when compared to individuals without the disease, limitations that can increase the need for care by others, decrease social life and interfere with the well-being of these patients and their families³⁶.

In the Self-perception domain, the diagnoses of chronic low self-esteem^{9,11}, body image disorder¹¹ and risk of loneliness¹¹ were identified. Diabetic individuals are subjected to several changes and complications of the disease that can impact on lifestyle with worsening of their self-esteem and self-image, such as the inability to exercise social, professional, family and leisure activities, which triggers moments of loneliness³⁷, corresponding then with the diagnoses found in the studies.

For the Coping and stress tolerance domain, three main diagnoses were evidenced: compromised family coping^{9,12}, anxiety^{10,19,20,25} and fear^{11,18}. The patients reported the changes imposed by the illness, acute and chronic complications, the need for hospitalizations, changes in family dynamics with changes in professional/productive life, dependence on activities of daily living, changes in sexual life, psychological distress associated with the management of family members, and overload for the family in dealing with a sick family member. Some fears were also reported, such as: fear of hypoglycemia, death and consequent depression. It can be seen, therefore, the great repercussion of diabetes in people's lives and, in general, this approach is not always possible to be fully contemplated only by nurses due to the complexity of the context, thus suggesting the need for a multidisciplinary approach to meet all the aspects related to DM³⁸.

Another domain identified in the study was Activity/rest, contemplating the following diagnoses: impaired physical mobility^{9,11,12,18,22,25,27}, fatigue^{9,11,12,25}, impaired sleep pattern^{9,11,12,18} and insomnia^{24,25}. Regarding the impaired physical mobility ND, diabetic patients have balance disorders due to sensory-motor changes, especially in the feet, which causes impairment of their mobility³⁹. Regarding insomnia, the disorder is defined as limited time in the quantity and/or quality of sleep that impairs the normal performance of the functions of daily life⁴. Thus, nurses can use instruments to assess sleep quality and implement actions aimed at improving their quality in these patients.

As for the Elimination and exchange domain, the impaired urinary elimination ND^{11,12,18,23} stood out. According to NANDA-I taxonomy II⁴, dysuria, hesitation, urinary incontinence and nocturia are some of the defining characteristics of this ND and that can cause losses in the quality of life and social interaction of these patients. The repercussions related to this diagnosis are varied and can trigger physical, social, psychological, hygienic and economic discomfort. Among the emotional factors, there are feelings of fear, concerns and worries due to the uneasiness related to the availability of bathrooms, in addition to feelings of shame at the presence of urine odor⁴⁰.

Limitation of the study

The search strategy using only the Boolean operator *AND* is considered to be a limitation of the study, which restricted the identification of a greater number of publications that could contribute with greater evidence related to the theme.

CONCLUSION

This review made it possible to identify 60 NDs present in patients with diabetes mellitus published in scientific articles, with a large part of studies carried out in Brazil. The results showed that the nursing diagnoses found are based on the health status of the diabetic patients, corresponding to the clinical focus of the Nursing science and needing attention to human

responses directed to the domains of Health promotion, Nutrition, Elimination and exchange, Activity/rest, Safety/protection and Coping and stress tolerance.

REFERENCES

1. American Diabetes Association. Standards of Medical Care in Diabetes. Diabetes Care [Internet]. 2019 [cited 2020 Jul 05]; 42(Suppl 1). Available from: https://care.diabetesjournals.org/content/diacare/suppl/2018/12/17/42.Supplement_1.DC1/DC_42_S1_2019_UPDATED.pdf.
2. Oliveira JEP, Montenegro Junior RM, Vencio S, organizadores. Diretrizes da Sociedade Brasileira de Diabetes, 2019-2020 [Internet]. São Paulo: Editora Clannad; 2017 [cited 2020 Jul 05]. Available from: <https://www.diabetes.org.br/profissionais/images/DIRETRIZES-COMPLETA-2019-2020.pdf>.
3. Araújo ESS, Silva L de F da, Moreira TMM, Almeida PC de, Freitas MC de, Guedes MVC. Nursing care to patients with diabetes based on King's Theory. Rev. Bras. Enferm. [Internet]. 2018 [cited 2020 Jun 02]; 71(3):1092-8. DOI: <http://dx.doi.org/10.1590/0034-7167-2016-0268>.
4. Herdman TH, Kamitsuru S. Diagnósticos de enfermagem da NANDA-I: definições e classificação 2018-2020. 11ª ed. Porto Alegre: Artmed; 2018.
5. Mendes KDS, Silveira RC de CP, Galvão CM. Integrative literature review: a research method to incorporate evidence in health care and nursing. Texto Context – Enferm. [Internet]. 2008 [cited 2020 Jun 02]; 17(4):758-64. DOI: <http://dx.doi.org/10.1590/S0104-07072008000400018>.
6. Galvão TF, Pansani TSA, Harrad D. Principais itens para relatar revisões sistemáticas e meta-análises: a recomendação PRISMA. Epidemiol. Serv. Saúde [Internet]. 2015 [cited 2020 Jun 02]; 24(2):335-342. DOI: <https://doi.org/10.5123/S1679-49742015000200017>.
7. Melnyk BM, Fineout-Overholt E. Evidence-based practice in nursing healthcare: a guide to best practice. Philadelphia: Lippincott Williams Wilkins; 2005.
8. Faeda A, Ponce de Leon CGRC. Nursing assistance to a patient with Diabetes Mellitus. Rev. Bras. Enferm. [Internet]. 2006 [cited 2020 Jun 02]; 59(6):818-21. DOI: <http://dx.doi.org/10.1590/S0034-71672006000600019>.
9. Becker TAC, Teixeira CRS, Zanetti ML. Nursing diagnoses for diabetic patients using insulin. Rev. Bras. Enferm. [Internet]. 2008 [cited 2020 Jun 02]; 61(6):847-52. DOI: <http://dx.doi.org/10.1590/S0034-71672008000600009>.
10. Milhomem ACM, Mantelli FF, Lima GAV, Bachion MM, Munari DB. Nursing diagnosis identified in people with diabetes type 2 by means of an approach based on Orem's model. Rev Eletrônica Enferm [Internet]. 2008 [cited 2020 Jun 02]; 10(2):321-36. DOI: <https://doi.org/10.5216/ree.v10i2.8031>.
11. Teixeira CRS, Zanetti ML, Pereira MCA. Nursing diagnoses in people with diabetes mellitus according to Orem's theory of self-care. ACTA Paul Enferm [Internet]. 2009 [cited 2020 Jun 02]; 22(4):385-91. DOI: <http://dx.doi.org/10.1590/S0103-21002009000400006>.
12. Teixeira CRS, Nakanish MK, Becker TAC, Zanetti ML, Kusumota L, Landim CAP. Nursing diagnosis "Altered urinary elimination" in persons with Diabetes Mellitus. Rev Bras Enferm [Internet]. 2010 [cited 2020 Jun 02]; 63(6):908-12. DOI: <http://dx.doi.org/10.1590/S0034-71672010000600006>.
13. Mendes LC, Sousa VEC, Lopes MVO. Accuracy of diagnosis of the defining characteristics of ineffective family therapeutic regimen management. ACTA Paul. Enferm. [Internet]. 2011 [cited 2020 Jun 02]; 24(2):219-24. DOI: <http://dx.doi.org/10.1590/S0103-21002011000200010>.
14. Teixeira CRS, Becker TAC, Citro R, Zanetti ML, Landim CAP. Validation of nursing interventions in people with diabetes mellitus. Rev. Esc. Enferm. USP [Internet]. 2011 [cited 2020 Jun 02]; 45(1):173-9. DOI: <http://dx.doi.org/10.1590/S0080-62342011000100024>.
15. Puig Llobet M, Moreno Arroyo C. Nursing assessment for an elder person served in the Program Primary Care. Gerokomos [Internet]. 2011 [cited 2020 Jun 02]; 22(3): 118-120. DOI: <http://dx.doi.org/10.4321/S1134-928X2011000300005>.
16. Araújo MFM, Alencar AMPG, Araújo TM, Damasceno MMC, Caetano JÁ, Ximenes LB, et al. Readiness for enhanced self-health management among people with diabetes mellitus. ACTA Paul Enferm [Internet]. 2012 [cited 2020 Jun 02]; 25(1):133-9. DOI: <http://dx.doi.org/10.1590/S0103-21002012000100023>.
17. Minthorn C, Lunney M. Participant action research with bedside nurses to identify NANDA-International, Nursing Interventions Classification, and Nursing Outcomes Classification categories for hospitalized persons with diabetes. Appl Nurs Res [Internet]. 2012 [cited 2020 Jun 02]; 25(2):75-80. DOI: <https://doi.org/10.1016/j.apnr.2010.08.001>.
18. López-Pisa RM, Prats-Guardiola M. Joint home follow-up of a patient with complicated diabetes mellitus by the case manager and the community nurse: II. Enfermería Clínica [Internet]. 2011 [cited 2020 Jun 02]; 22(1): 46-50. DOI: <https://doi.org/10.1016/j.enfcli.2010.12.005>.
19. Franzen E, Scain SF, Záchia SA, Schmidt ML, Rabin EG, da Rosa NG, et al. Outpatient nursing consultation and nursing diagnoses related to demographic and clinical characteristics. Rev. Gaucha Enferm. [Internet]. 2012 [cited 2020 Jun 02]; 33(3):42-51. DOI: <http://dx.doi.org/10.1590/S1983-14472012000300006>.
20. Scain SF, Franzen E, dos Santos LB, Heldt E. Accuracy of nursing interventions for patients with type 2 diabetes mellitus in outpatient consultation. Rev. Gaucha Enferm. [Internet]. 2013 [cited 2020 Jun 02]; 34(2):14-20. DOI: <http://dx.doi.org/10.1590/S1983-14472013000200002>.
21. Silva LHA, Carmona EV, Beck ARM, Lima MHM, Araújo EP. Nursing diagnoses of diabetic patient medical charts: a descriptive study. Online braz j nurs [Internet]. 2013 [cited 2020 Jun 02]; 12(1):62-72. DOI: <https://doi.org/10.5935/1676-4285.20133894>.

22. De Moura PC, Braga LM, Domingos CS, Rodrigues NV, Correia MDL, Oliveira LVA. Diagnoses and nursing interventions in hypertensive and diabetic individuals according to Orem's Theory. *Rev. Rene*, [Internet]. 2014 [cited 2020 Jun 02]; 15(6), 1039-46. DOI: <https://doi.org/10.15253/2175-6783.2014000600018>.
23. Ulloa Sabogal IM. Nursing process in the person with diabetes mellitus from a perspective on self-care. *Rev. Cubana Enfermer.* [Internet]. 2017 Jun [cited 2020 Jun 02]; 33(2). Available from: http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S0864-03192017000200019&lng=es.
24. Sousa JAV, Grden CRB, Sloboda DA, Paula ACM, Silva JHO, Sicorra TR. Clinical Nursing care for elderly institutionalized diabetics. *Rev. Enferm. UFPE on line* [Internet]. 2017 [cited 2020 Jun 02]; 11(4):1609-15. Available from: <https://periodicos.ufpe.br/revistas/revistaenfermagem/article/view/15229>.
25. Castro-Sampaio FC, Oliveira PP, Mata LRF, Moraes JT, Fonseca DF, Vieira VAS. Profile of nursing diagnoses in people with hypertension and diabetes. *Investig y Educ. en Enferm.* [Internet]. 2017 [cited 2020 Jun 02]; 35(2):139-53. DOI: <http://dx.doi.org/10.17533/udea.iee.v35n2a03>.
26. Muñoz GM, Gómez BA, Becerril LC, Solano GS. Lifestyle of the elderly person living with diabetes and characterization of nursing diagnoses. *Texto Contexto Enferm* [Internet]. 2019 [cited 2020 jun 02]; 28:e20170552. DOI: <http://dx.doi.org/10.1590/1980-265X-TCE-2017-0552>.
27. Ribeiro IA, Lima LR, Volpe CRG, Funghetto SS, Rehem TCMSB, Stival MM. Frailty syndrome in the elderly in elderly with chronic diseases in Primary Care. *Rev. esc. enferm. USP* [Internet]. 2019 [cited 2020 Jun 02]; 53: e03449. DOI: <http://dx.doi.org/10.1590/S1980-220X2018002603449>.
28. Nemer A, Cavalcante T, Moreira R, Araujo T, Ferreira J, Oliveira L. Nursing Diagnosis Risk for Unstable Blood Glucose Level in Patients with Diabetes Mellitus. *International Journal of Nursing Knowledge*. [Internet]. 2020 [cited 2020 Jun 02]; 53: e03449. DOI: <https://doi.org/10.1111/2047-3095.12282>.
29. Benamer S, Eljazwi I, Mohamed R, Masoud H, Tuwati M, Elbarsha AM. Association of hyperglycemia with in-hospital mortality and morbidity in Libyan patients with diabetes and acute coronary syndromes. *Oman Med. J.* [Internet]. 2015 [cited 2020 Jun 02]; 30(5):326-30. DOI: <https://doi.org/10.5001/omj.2015.67>.
30. Ramos CFV, Araruna R da C, Lima CMF de, Santana CLA de, Tanaka LH. Education practices: research-action with nurses of Family Health Strategy. *Rev. Bras. Enferm.* [Internet]. 2018 [cited 2020 Jun 02]; 71(3):1144-51. DOI: <http://dx.doi.org/10.1590/0034-7167-2017-0284>.
31. Diaz N, Moreira PB, Haluch RF, Ravazzani AC, Kusma SZ. O impacto do diabetes mellitus na qualidade de. *Rev. Médica da UFPR* [Internet]. 2016 [cited 2020 Jun 02]; 3(1):5-12. DOI: <http://dx.doi.org/10.5380/rmu.v3i1.46380>.
32. Souza DAS, Reis IA, Cortez DN, Afonso GS, Torres HC. Evaluation of home visits for the empowerment of diabetes self-care. *ACTA Paul. Enferm.* [Internet]. 2017 [cited 2020 Jun 02]; 30(4): 350-7. DOI: <http://dx.doi.org/10.1590/1982-0194201700052>.
33. Soares RL, Ribeiro SM O, Fachin LB, Lima ACTS, Ramos LO, Ferreira LV. Routine evaluation of diabetic foot in hospitalized patients - neuropathy and vasculopathy prevalence. *HU Rev.* [Internet]. 2017 [cited 2020 Jun 02]; 43(3):205-10. DOI: <https://doi.org/10.34019/1982-8047.2017.v43.2746>.
34. Kuznier T, Kuznier TP, Souza CC, Chianca TCM, Ercole FF, Alves M. Risk factors to falls described in the nanda-i taxonomy for a population of elderly. *Rev. Enferm. do Centro-Oeste Min.* [Internet]. 2015 [cited 2020 Jun 02]; 5(3):1855-70. Available from: <http://www.seer.ufsj.edu.br/index.php/recom/article/view/783>.
35. Santos MM, Soethe MS, Soares AV. Evaluation of diabetic polyneuropathy and the prevention of ulcers in the elderly. *Revista Kairos: Gerontologia* [Internet]. 2018 [cited 2020 Jun 02]; 21(1):355-76. Available from: <https://revistas.pucsp.br/index.php/kairos/article/view/39888>.
36. Anjos KF, Boery RNSO, Pereira R, Pedreira LC, Vilela ABA, Santos VC, et al. Association between social support and quality of life of relative caregivers of elderly dependents. *Cienc e Saude Coletiva* [Internet]. 2015 [cited 2020 Jun 02]; 20(5):1321-30. DOI: <http://dx.doi.org/10.1590/1413-81232015205.14192014>.
37. Salomé GM, Ferreira LM. Locus of health control, body image and self-image in diabetic individuals with ulcerated feet. *J. Nurs. UFPE on line* [Internet]. 2017 [cited 2020 Jun 02]; 11(9):3419-28. Available from: <https://periodicos.ufpe.br/revistas/revistaenfermagem/article/view/110241>.
38. Baade RTW, Bueno E. Co-constyruction of the healthcare autonomy for person with diabetes. *Interface Commun. Heal. Educ.* [Internet]. 2016 [cited 2020 Jun 02]; 20(59):941-51. DOI: <https://doi.org/10.1590/1807-57622015.0130>.
39. Agostini CM, Rodrigues VS, Guimarães AC, Damázio LCM, Vasconcelos NN. Analysis of motor performance and body equilibrium of active elderlys with arterial hypertension and type 2 diabetes. *Rev. Aten. Saúde* [Internet]. 2018 [cited 2020 Jun 02]; 16(55):29-35. DOI: <https://doi.org/10.13037/ras.vol16n55.4690>.
40. Salomé GM, Oliveira TF, Pereira WA. The Impact of Urinary Incontinence on the Self-esteem and Self-image of Patients with Diabetes. *Revista Estima* [Internet]. 2016 [cited 2020 Jun 02]; 14(3):127-36. DOI: <https://doi.org/10.5327/Z1806-3144201600030005>.