Original Article

Nursing diagnoses in people with diabetes mellitus according to Orem's theory of self-care*

Perfil de diagnósticos de enfermagem em pessoas com diabetes segundo modelo conceitual de Orem

Perfil de diagnósticos de enfermería en personas con diabetes según el modelo conceptual de Orem

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ABSTRACT

Objective: To identify nursing diagnoses in people with diabetes mellitus according to Orem's theory of self-care. **Methods:** The sample consisted of 31 people with diabetes mellitus who received care in 2006 at a University Research and Community Service Center in the state of São Paulo. Data were collected through health assessment and interviews. Nursing diagnoses were made according to NANDA-I Taxonomy II, using critical thinking described by Risner. **Results:** Among 37 nursing diagnoses, 3 of them were present in more than 50% of the participants: ineffective management of therapeutic regimen (67%), knowledge deficit (51%), and impaired skin integrity (51%). Eighteen nursing diagnoses were related to Orem's requirements for universal self-care. **Conclusion**: Knowing the most common nursing diagnoses in people with diabetes mellitus can guide the educative actions of nurses in promoting the development of self-care agency among people with diabetes mellitus.

Keywords: Nursing diagnosis; Diabetes mellitus; Nursing care

RESUMO

Objetivo: Identificar os diagnósticos de enfermagem em pessoas com diabetes mellitus, segundo o modelo conceitual de Orem. **Métodos:** Participaram 31 pessoas com diabetes atendidas em um Centro Universitário de Pesquisa e Extensão, do interior paulista, em 2006. Os dados foram obtidos por meio de exame físico e entrevista dirigida de casos múltiplos. Os diagnósticos de enfermagem foram identificados segundo a Taxonomia II da NANDA, mediante o processo de raciocínio diagnóstico de Risner. **Resultados:** Dos 37 diagnósticos de enfermagem, três apresentaram freqüência superior a 50%: controle ineficaz do regime terapêutico (67%), conhecimento deficiente (51%) e integridade da pele prejudicada (51%). Dezoito diagnósticos de enfermagem estavam relacionados aos requisitos para o autocuidado universal, preconizado por Orem **Conclusão:** Os diagnósticos de enfermagem mostraram-se indicadores diferenciados para guiar as ações educativas do enfermeiro com enfoque no desenvolvimento das habilidades de autocuidado para pessoas com diabetes.

Descritores: Diagnósticos de enfermagem; Diabetes mellitus; Cuidados de enfermagem

RESUMEN

Objetivo: Identificar los diagnósticos de enfermería en personas con diabetes mellitus, según el modelo conceptual de Orem. **Métodos:** Participaron en el estudio 31 personas con diabetes atendidas en un Centro Universitario de Investigación y Extensión, del interior paulista, en el 2006. Los datos fueron obtenidos por medio de examen físico y entrevista dirigida de casos múltiples. Los diagnósticos de enfermería fueron identificados según la Taxonomía II de la NANDA, mediante el proceso de raciocinio diagnóstico de Risner. **Resultados:** De los 37 diagnósticos de enfermería, tres presentaron frecuencia superior al 50%: control ineficaz del régimen terapéutico (67%), conocimiento deficiente (51%) e integridad de la piel perjudicada (51%). Dieciocho diagnósticos de enfermería estaban relacionados a los requisitos para el autocuidado universal, preconizado por Orem. **Conclusión:** Los diagnósticos de enfermería se mostraron como indicadores diferenciados para guiar las acciones educativas del enfermero con énfasis en el desarrollo de las habilidades de autocuidado para personas con diabetes.

Descriptores: Diagnósticos de enfermería; Diabetes mellitus; Atención de enfermería

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INTRODUCTION

Cardiovascular diseases, cancer and diabetes mellitus (DM) are considered the most important non-communicable diseases for public health in Latin America and the Caribbean, due to their prevalence and morbimortality. The economic costs associated with treatment and complications of diabetes are a burden for health services and families, with ramifications for public policies in health. In the 1990s, DM affected the health of 110 million individuals, a number that may double to 221 million until 2010[1].

In Brazil, the prevalence of diabetes mellitus[2] from 1986 to 1988, in the urban population aged between 30 and 69 years, was 7.6%. It is believed that the increase in population life expectancy has contributed to the growth in its prevalence. This was also observed in the city of Ribeirão Preto-SP[3], where prevalence was 12.1% in the urban population in this age group.

This index has been growing as a result of several factors, such as the modernization process, higher urbanization rate, industrialization, inadequate dietary habits, physical inactivity, obesity, stress, increase in life expectancy, and diabetics' longer overall survival[4].

Another factor to be considered is that, in the long term, the progression of diabetes mellitus leads to complications that involve several organs, known as micro- and macrovascular complications, i.e. cardiovascular complications, nephropathy, retinopathy and neuropathy, which require nursing care based on the comprehensive approach towards diabetics[5].

In this sense, it is necessary to seek strategies to resolve specific problems shown by this population. These strategies involve a comprehensive approach, which considers physiopathological, psychosocial and educational elements, in addition to health care reorganization on the different service levels of the *Sistema Único de Saúde* (Unified Health System) network[6].

One of the research challenges, especially in diabetes care, involves the selection of indicators that reflect the impact of the service on the health of the population cared for[7].

In view of this situation, it is expected that the nurse, as the professional responsible for nursing care systematization, be competent when selecting indicators to assess care for diabetics. On the other hand, there is a gap in the teaching and practice for the nursing process functioning, especially when identifying nursing diagnoses, which shows the importance of studies of this nature. In this way, efforts must be made by professionals to seek the means to help themselves to develop professionally. This movement has currently been happening in health institutions to qualify professionals who work for them[8].

In Brazil, several studies[9-18] have been performed, aiming to identify nursing diagnoses in patients with various chronic diseases. However, there are few studies for the population with diabetes. Nonetheless, it is the research and use of nursing theories that establish the main focus of nursing care. Thus, for people with diabetes, researchers decided to use Orem's conceptual model[19], in which self-care is associated with the practice of predetermined activities that the individual performs for their own benefit to achieve better life conditions, health and well-being. Capacity for self-care consists of specialized abilities, developed throughout people's lives and indispensable to perform any self-care action, especially when there is a health problem.

Orem presented three theoretical constructions: the Self-Care Theory, the Self-Care Deficit Theory and the Theory of Nursing Systems, interconnected and interrelated, with their main focus on self-care, and which may be applied to all the people who need care. He also presented a method to determine self-care deficiencies and subsequently define an individual's or nurse's roles to meet self-care requirements.

The theoretical models have contributed to form meaningful concepts for Nursing, as well as a language used in the professional field. On the other hand, the diagnoses formulated only have meaning in the context of the nursing process if they are a link between meaningful data collection and the determination of interventions necessary to achieve the expected results.

In view of what has been exposed here, researchers aimed to identify nursing diagnoses in people with diabetes mellitus, according to Orem's conceptual model, seeking meaningful data that can be the basis for the nurse's interventions in multiprofessional care for diabetes.

METHODS

For the development of this research, a multiple case study was selected. This study was performed in a *Centro de Pesquisa e Extensão Universitária* (University Research and Extension Center) in the countryside of the state of São Paulo, between August 2006 and February 2007.

A questionnaire with closed questions about self-care deficits and definition of the individual's or nurse's roles to meet self-care requirements was designed by the researcher and used to collect data. This questionnaire was organized according to the following items:

identification data; self-care; therapeutic requirements for self-care; self-care requirements; development and deviations from health[19].

The data collection instrument was assessed by three nurses for content relevance and clarity. To guarantee questionnaire reliability, the researcher and a nurse, who holds a Ph.D. and is experienced in the use of the nursing process in teaching, research and health care, applied it individually to five people, during a short period of time, to assess reliability among examiners.

Data collection was conducted by researcher and, after giving consent to participate in the study, individuals were asked to sign an Informed Consent Form. First, a physical examination in a private room was performed, followed by a guided interview. Each interview lasted one hour and 15 minutes on average and data were concomitantly recorded.

Next, data were analyzed according to NANDA Taxonomy II[20] and diagnostic reasoning process stages[21]. Validation was performed by four nurses, experienced in the nursing process, to identify possible gaps and/or diverging data, thus confirming or not each nursing diagnosis. This assessment showed the need to complement some information and to clarify diverging data. After this stage, nursing diagnoses were reviewed, based on the validation performed by nurses. Data collection was finalized after consensus about nursing diagnoses identified by participants in this study was reached between the researcher and nurses.

After this stage, data were grouped according to self-care categories, therapeutic requirements for self-care and self-care requirements. Self-care requirements were subdivided into universal and development requirements. Percent statistics and absolute numbers were used to show the results. This research project was approved by the *Comitê de Ética em Pesquisa da Escola de Enfermagem de Ribeirão Preto da Universidade de São Paulo* (*Universidade de São Paulo* Ribeirão Preto School of Nursing Research Ethics Committee) – Protocol n° 0607/2005.

RESULTS

A total of 31 adults with types 1 and 2 diabetes, registered with the above mentioned Center, predominantly females (54.8%) and with type 2 diabetes (77.4%), participated in the present study. As regards the age group, 29% were aged between 50 and 59 years, and 45.2% were 65 years or older. In terms of level of education, 35.5% had completed elementary school. In this study, 37 nursing diagnoses were identified, of which 30 were real-type nursing diagnoses and 7 were risk-type ones[19]. It should be emphasized that of the 37 nursing diagnoses identified, three showed frequency above 50%: damaged skin integrity, deficient knowledge and ineffective therapeutic regimen control, as shown on Table 1. Mean number of nursing diagnoses per participant was 5.96.

As regards deviations from health[19], of the 37 nursing diagnoses identified, six were found to be associated with self-care and four with therapeutic requirements for self-care. Among self-care requirements, 18 diagnoses were found to be associated with universal requirements and nine associated with development, as shown on Table 2.

Table 1 – Nursing diagnoses according to people with diabetes cared for in the *Centro Universitário de Pesquisa e Extensão*. Ribeirão Preto (SP), 2006 /2007

Nursing diagnoses	nº.	%
Ineffective therapeutic regimen control	21	67.7
Damaged skin integrity	16	51.0
Deficient knowledge	16	51.0
Unbalanced diet, above body requirements	12	38.7
Damaged urinary elimination	11	35.5
Risk of infection	11	35.5
Health seeking behavior	10	32.2
Disturbed sleep pattern	10	32.2
Chronic pain	10	32.2
Damaged physical mobility	7	22.6
Ineffective family coping ability	6	19.3
Risk of damaged skin integrity	6	19.3
Ineffective sexual pattern	5	16.1
Sexual dysfunction	4	12.9
Impotence associated with complications	4	12.9
Risk of neurovascular dysfunction	4	12.9
Acute pain	3	9.6
Sedentary lifestyle	3	9.6
Risk of non-commitment	3	9.6
Damaged adaptation	2	6.4
Deficit in diet self-care	2	6.4
Effort urinary incontinence	2	6.4
Damaged home maintenance	2	6.4
Fear	2	6.4
Chronic low self-esteem	1	3.2
Deficit in self-care for bathing/hygiene	1	3.2
Deficit in self-care for dressing/getting ready	1	3.2
Willingness for greater therapeutic regimen control	1	3.2
Body image disorder	1	3.2
Fatigue	1	3.2
Urgency urinary incontinence	1	3.2
Ineffective health maintenance	1	3.2
Risk of unbalanced volume of liquids	1	3.2
Risk of loneliness	1	3.2
Risk of injury	1	3.2
Intolerance to activity	1	3.2
Disturbed thought processes	1	3.2
Total	**185**	**-**

Table 2 – Nursing diagnoses according to Orem's Conceptual Model of Self-Care in people with diabetics cared for in the *Centro Universitário de Pesquisa e Extensão*. Ribeirão Preto (SP), 2007

Nursing diagnoses	nº	%
Self-care		
Health seeking behavior	10	32.
Ineffective sexual pattern	5	16.
Risk of non-commitment	3	9.
Deficit in diet self-care	2	6.
Deficit in self-care for bathing/hygiene	1	3.
Deficit in self-care for dressing/getting ready	1	3.
Therapeutic requirements for self-care		
Ineffective therapeutic regimen control	21	67.
Sedentary lifestyle	3	9.
Willingness for greater therapeutic regimen control	1	3.
Ineffective family therapeutic regimen control	1	3.
Universal self-care requirements		
Damaged skin integrity	16	51.
Unbalanced diet, above body requirements	12	38.
Risk of infection	11	35.
Damaged urinary elimination	11	35.
Disturbed sleep pattern	10	32.
Chronic pain	10	32.
Damaged physical mobility	7	22.
Risk of damaged skin integrity	6	19.
Risk of neurovascular dysfunction	4	12.
Sexual dysfunction	4	12.
Acute pain	3	9.
Effort urinary incontinence	2	6.
Risk of unbalanced volume of liquids	1	3.
Risk of injury	1	3.
Urgency urinary incontinence	1	3.
Fatigue	1	3.
Chronic low self-esteem	1	3.
Intolerance to activity	1	3.
Development		
Deficient knowledge	16	51.
Ineffective family coping ability	6	19.
Impotence	3	9.
Damaged adaptation	2	6.
Damaged home maintenance	2	6.
Fear	1	3.
Disturbed thought processes	1	3.
Body image disorder	1	3.
Risk of loneliness	1	3.

DISCUSSION

Mean number of nursing diagnoses per participant in the study was 5.96. A study performed in Los Angeles, in the US, showed that 45 nursing diagnoses were identified in patients hospitalized due to HIV/AIDS, with a mean 3.3±1.8 diagnoses per patient[22]. In a study performed in Iceland, among 1,217 medical records, the mean number of nursing diagnoses per patient was 3.28[23].

Professionals need to have broad knowledge about diabetes physiopathology and experience with clinical judgment, when formulating nursing diagnoses and selecting appropriate interventions, to establish nursing diagnoses in people with diabetes. Selection of the most appropriate interventions includes sensible prioritization of nursing diagnoses, an essential aspect, especially in those cases where several diagnoses are identified[24].

Of all the 31 participants with diabetes, 21 (67.7%) showed the diagnosis of ineffective therapeutic regimen control. This nursing diagnosis is defined as regulation and integration pattern in the daily life of a treatment program of diseases and disease sequelae, which is unsatisfactory to achieve specific health objectives. This difficulty may be justified by the complexity of factors involved in drug and non-drug treatment adherence, established for the metabolic control of people with diabetes.

In contrast, it is important that diabetics and their family members acquire knowledge about self-care in diabetes to make decisions in their daily life[1]. In this sense, several authors(6,25) point to educational support as an instrument used to obtain metabolic control, being recognized as an integral part of the therapy.

Educational support has an impressive impact on the behavior of people with diabetes, in the evolution of their health, as well as in health service costs. Studies show that changes in lifestyle through continuing education of such people result in weight loss, better glycemic, blood pressure and lipid control, consequently reducing the risk of cardiovascular diseases[26-27].

The benefits of glycemic control to prevent complications caused by diabetes have encouraged health professionals, patients and family members to understand the importance of monitoring glycemic and metabolic parameters, which should be performed by the patients themselves or caregivers and constitutes the foundation of disease treatment.

In this sense, educational support aims to increase knowledge about diabetes, develop self-care abilities, stimulate behavioral changes, provide support to manage daily problems, and also prevent the disease's acute and chronic complications.

The fact that 16 (51%) patients showed the nursing diagnosis of deficient knowledge, defined as the absence or deficiency of cognitive information about a specific topic[20], corroborates this question. Education in diabetes to obtain good metabolic control includes the appropriate frequency of blood glucose self-control, nutritional therapy, regular physical activity, pharmacological therapies, guidance on prevention and treatment of acute and chronic complications, continuing education and reinforcement, in addition to the regular assessment of treatment objectives[26-27].

Another factor to be considered for the development of self-care abilities refers to the disease's asymptomatic nature. In this sense, it is necessary to develop the self-

care ability during the course of daily life through a spontaneous learning process, supervised by health professionals and family members, as well as the individual's own self-care experience.

In this way, people can change their health conditions using knowledge and the ability to adapt. However, they need encouragement, in addition to knowledge and abilities, for changes to occur.

To encourage diabetic patients with altered glycemic levels, while they have not shown any signs or symptoms of the disease yet, is one of the challenges health professionals have to face when caring for this population. Thus, educational strategies must include emotional and social aspects, i.e. the system of values and beliefs that guide the attitudes and actions these people and their families have towards their health[6].

The nursing diagnosis of damaged skin integrity was identified in 16 (51%) participants and defined as altered epidermis and/or dermis. Skin breakdown and the invasion of body structures associated with the daily administration of subcutaneous insulin was observed in 7 (22%) individuals[20].

Selection of the adequate set of instruments, mastery of the technique and alternation of skin application areas, among other things[28], are recognizably essential for insulin application. However, people with diabetes can show skin reactions and complications, such as insulin lipodystrophy, lipohypertrophy, hardened nodules, ecchymosis, burning, irritation, and insulin allergy, which may occur where it was applied or be characterized by a systemic reaction[29].

Thus, skin assessment in insulin application areas needs to be systematically inspected by nurses, aiming to identify early changes. In addition, the nurse must perform follow-up of a diabetic person for self-care abilities, once the use of insulin requires learning about several aspects, from its purchase to effective application. In addition, there is the involvement of the family, friends and support groups to corroborate the reach of self-care abilities, especially in the supervision of skin integrity performed by people with diabetes.

On the other hand, damaged skin integrity also appears, due to skin breakdown associated with old age, metabolic alterations and changed foot sensitivity. Among chronic complications, those associated with the feet stand out, as they represent a multifaceted physiopathological state characterized by the appearance of lesions resulting from the neuropathy. Lesions are usually caused by a trauma that leads to infection and may result in amputation, when early adequate treatment is neglected[30].

One fundamental step to identify risk factors is foot assessment, comprised by a dermatological, structural, circulatory and tactile pressure sensitivity inspection, in addition to hygienic conditions and shoe characteristics. These actions, when performed by professionals who act on the primary level of health, will contribute to reduce the risk of morbidities and complications in diabetic people's feet[31].

Health professionals should be responsible for identifying people at risk for the diabetic foot and intensifying actions to promote its control, among those already diagnosed. Health professionals' need to assess diabetics' lower limbs thoroughly and regularly, in addition to developing educational self-care activities that include people with diabetes and their family to achieve good glycemic control, should be emphasized[30].

In this study, Orem's Conceptual Model of Self-Care was the choice, once the identification of requirements associated with deviation from health, according to the NANDA Taxonomy, enabled types of behavior towards self-care adopted by people with diabetes to be known.

As regards diagnoses of types of self-care behavior, six (16%) referred to self-care, while four (11%) referred to the therapeutic requirements for self-care. There were 18 (49%) diagnoses of universal self-care requirements and nine (24%) of development.

It should be emphasized that the predominance of 18 (49%) nursing diagnoses of universal self-care requirements is in agreement with the literature[9-10]. It is understood that universal self-care requirements are important indicators of a diabetic person's health status, once it is associated with complications resulting from poor metabolic control of the disease during the whole time. Among the factors that can explain this behavior are the low educational level and the lack of financial resources necessary to control the disease[9].

The use of Orem's Conceptual Model enabled the therapeutic requirements of people with diabetes to be known. It is understood that the aspects mentioned are important indicators to be worked by the nurse to guide educational actions aimed at developing self-care abilities.

The need to systematize nursing care should also be considered, in addition to identifying nursing diagnoses and testing nursing interventions for each of the diagnoses investigated.

CONCLUSIONS

Of all the 31 people with diabetes investigated, a total of 37 nursing diagnoses were identified, of which 30 were real-type nursing diagnoses and seven were risk-type ones. Of all the 37 nursing diagnoses, three showed frequency higher than 50%, i.e. ineffective control of

the therapeutic regimen, damaged skin integrity and deficient knowledge. The mean was 5.96 nursing diagnoses per patient. There was a predominance of 18 nursing diagnoses associated with universal self-care requirements, according to Orem's Conceptual Model.

It is believed that the identification of nursing diagnoses contributes to outline different clinical actions in nursing. On the other hand, to know nursing diagnoses of people with diabetes, followed in a primary care service, enables nurses to plan individual care provided to these clients and, especially, to contribute to the acquisition and maintenance of self-care in diabetes.

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