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THE NECESSITY TO EVALUATE THE NEEDS OF TYPE 2 DIABETES PATIENTS AND NURSING INTERVENTION

Daniela Pătru [1,✉], ***Silviu Daniel Preda*** [2], ***Agnesa Pcela*** [2], ***Călin Alexandru Voiculescu*** [2], ***Simona Dionisie*** [1], ***Maria Moța*** [1,2]

[1] Clinic of Diabetes, Nutrition and Metabolic Diseases, Clinical County Emergency Hospital Craiova
[2] University of Medicine and Pharmacy Craiova

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Abstract

Background and Aims: *The aim of this paper was to demonstrate the necessity to evaluate the needs of patients with type 2 diabetes (assessing degrees of dependency) and nursing intervention for each of the 14 fundamental needs of human beings.* ***Material and method:*** *The study was prospective and interventional, with a focus on educational methods, conducted over a period of 12 months on a group of 100 patients with type 2 diabetes. The stages of the study were: signing the informed consent, collecting data on a „nursing sheet", statistical processing and analysis of the obtained results.* ***Results:*** *The distribution of cases according to the total degree of dependence in carrying out the fundamental needs shows that, regardless of the stage of disease evolution, no cases of independence or total severe dependence were registered. On hospital admission, the number of minimum total dependence cases was lower than at discharge while the number of cases of average total dependence was higher on admission than at discharge, regardless of the stage of disease evolution.* ***Conclusions****: The assessment of the 14 fundamental needs of patients with diabetes is necessary to identify the degree of dependence, to plan nursing interventions and to apply individualized care for each patient.*

key words: *type 2 diabetes mellitus, need assessment, nursing intervention, nursing process, dependence degree, therapeutic education*

Background and Aims

Diabetes mellitus is a chronic, non-transmittable, extremely important disease, both for individuals and the society, due to its increasing worldwide prevalence and its impact on life duration and quality. Thus, diabetes patients exhibit a risk of cardiovascular mortality 2-4 times higher than those without diabetes, 75-80% of deaths being caused by cardiovascular events. In addition, diabetes has also a high economic impact, with extremely high costs (11% of health budgets in 2013 according to the International Diabetes Federation) [1,2].

The PREDATORR study, conducted at national level between 2013-2014 by the Romanian Society of Diabetes, Nutrition and Metabolic Diseases in collaboration with the Romanian Society of Nephrology, showed that the prevalence of diabetes in the Romanian adult

✉ Phone: 0251502171, mobile: 0744228893 *corresponding author e-mail*: patrudaniela61@yahoo.com

population (20-79 years old) is of 11. 6 ± 1.43%, while that of prediabetes is 18.4% ± 1.96%. The prevalence of diabetes progressively increases with age ($p < 0.05$) and it is significantly higher in men ($p < 0.05$) [3].

Diabetes has become a worldwide epidemic disease evolving proportionally with the epidemics of overweight / obesity [4,5]. Overall, type 2 diabetes (T2DM) is the main contributor to this epidemic, representing 90-95% of all cases of diabetes [6].

Type 2 diabetes is a chronic, insidiously evolving disease, generating total dependency on high levels, regardless of the declared age of the disease.

Each patient is "unique" and presents different values of dependence, therefore requiring an assessment of the 14 fundamental needs of human beings described by Virginia Henderson, the „father" of modern nursing. Virginia Hendersons theory is based on the fact that humans have 14 fundamental needs which must be autonomously carried out or sustained from the outside in order to obtain a state of biological, psychological, social, cultural and spiritual well-being state. These needs are listed according to their importance from 1 to 14 and are: the need to breathe and have a proper circulation, the need to eat, the need to eliminate, the need to move, the need to sleep, the need to dress, the need to maintain the temperature, the need to be clean, the need to avoid danger, the need to communicate, the need to practice religion, the need to be busy, the need to recreate, the need to learn [7].

The Nursing procedures used for the 14 fundamental needs of patients with type 2 diabetes allowed us to identify the patient's needs, formulate nursing diagnoses NANDA International (Nord American Nursing Diagnosis Association) and plan interventions [8]. One of the most important interventions is the therapeutic education, a non-pharmacological therapy, very important alongside the pharmacological therapy. It will start from the moment of diagnosis (the patient with diabetes and his family will receive some basic educational information), it will be intensified in the first month after diagnosis (educational program will be intense, giving patients the opportunity of understanding the complexity of diabetes and the need of cohabitation with it) and will continue for the rest of the life of the patients in order to receive new information and skills (the result of research, new technologies for treatment) or to renew/recover information in patients who were unresponsive to previous training or those who have forgotten the information received [9,10].

The aim of this paper was to demonstrate the necessity to evaluate the needs of T2DM patients (assessing the degrees of dependency) and nursing intervention for each of the 14 fundamental needs of human beings.

Material and methods

Our study was both descriptive (at enrollment we assessed the patient using specific nursing process procedures) and prospective/interventional since we performed nursing intervention for each of the 14 fundamental needs, focusing on educational methods.

The study was conducted over a period of 12 months (November 1st 2011 - October 31st 2012) in the Diabetes, Nutrition and Metabolic Diseases Clinic of the Emergency Clinical County Hospital Craiova, on a group of 100 T2DM patients admitted in hospital through the emergency service or sent by out-patient clinics. All patients signed an informed consent prior to their inclusion in the study. The study protocol was approved by the local ethics committee. We

included the first 2 hospitalized patients, 2 times per week, over a period of 6 months.

We elaborated a “Nursing Sheet" intended for collecting personal data (the standardized instrument for this study) regarding the 14 basic needs of the human being and the degree of independence/dependence for each of this need.

Patients were evaluated at inclusion (at hospital admission), 7 days after admission and 6 months after discharge from hospital.

Assessment of the dependence degree for the 14 fundamental human needs (according to Virginia Henderson: After establishing the Nursing diagnoses, for each patient included in the study we assessed the individual (partial) dependency level (for each of the 14 fundamental needs) and total dependence level (combined for all the 14 fundamental needs) using the following rules: any need that is done (accomplished) autonomously (independently) is noted with 1 point. Any case of minimum dependence (dependence reversible in a short amount of time) is noted with 2 points. Average dependence (noted with 3 points) requires substitution activities from the nurse/family over a long period of time (for example long duration treatment). Severe dependence is noted with 4 points and is a permanent dependence on the entourage/nurse (for example dependence of the need to move in patients with paralysis or amputations). Given this, and given the fact that there are 14 fundamental needs, total dependence is obtained by adding the score for individual/partial dependencies of each of the 14 needs. A total of 14 points indicates a person with complete autonomy (is independent in carrying out all 14 basic needs). Minimum total dependency is defined by a score of 15-28 points, average total dependence between 29 and 42 points while severe total dependence between 43 and 56 points.

The Nursing process gave us the possibility to holistically evaluate T2DM patients (biologically, psychologically, spiritually and socially) and establish a better communication with the patient.

Statistical analysis: All data were introduced in an electronic format and descriptive statistics analysis was performed. For data processing Microsoft Excel program was used (Microsoft Corp., Redmond, WA, USA) with XLSTAT suite for MS Excel (Addinsoft SARL, Paris, France) and the IBM SPSS Statistics 20.0 (IBM Corporation, Armonk, NY, USA).

Results

The study group consisted of 100 T2DM patients (48% women and 52% men), in different evolution stages of the disease. The patients were aged between 32 and 87 years old, the majority belonging to the 50-69 years old age group. The study group included 85% old diabetes cases and 15% cases of newly diagnosed diabetes. The distribution of diabetes complications on admission was: 8% of cases without complications, 3% with acute complications, 80% with chronic complications and 9% with both acute and chronic complications. Regarding the type of antidiabetic treatment, 24% of patients received oral antidiabetic drugs alone, 52% oral antidiabetic drugs + insulin, 21% insulin alone and 3% GLP1 agonists ± oral antidiabetic drugs.

The distribution of patients according to the degree of dependence for each individual fundamental need is given in Table 1.

We are giving in Figure 1 an exemplification of the results for the basic need – need to breathe and have a proper circulation – in newly diagnosed patients comparatively with those with logn standing diabetes at admission and at discharge.

Table 1. The dependence degree in carrying out the fundamental needs at hospital admission and 6 months after discharge for the whole study group.

Nr.	Fundamental need (according to V. Henderson)	Type of cases	Number of cases (%) on admission				Number of cases (%) at 6 months after discharge			
			Ind.	Min. dep.	Avg. dep.	Severe dep.	Ind.	Min. dep.	Avg. dep.	Severe dep.
1	The need to breathe and have a proper circulation	Newly detected	3 (20%)	5 (33.33%)	3 (20%)	4 (26.66%)	7 (46.66%)	4 (26.66%)	3 (20%)	1 (6.66%)
		Old	1 (1.17%)	45 (52.94%)	27 (31.76%)	12 (14.11%)	14 (16.47%)	50 (58.82%)	17 (20%)	4 (4.7%)
2	The need to eat	Newly detected	2 (13.33%)	7 (46.66%)	5 (33.33%)	1 (6.66%)	7 (46.66%)	5 (33.33%)	3 (20%)	0 (0%)
		Old	3 (3.52%)	22 (25.82%)	48 (56.47%)	12 (14.11%)	46 (54.11%)	34 (40%)	5 (5.88%)	0 (0%)
3	The need to eliminate	Newly detected	13 (86.66%)	1 (6.66%)	1 (6.66%)	0 (0%)	14 (93.33%)	1 (6.66%)	0 (0%)	0 (0%)
		Old	42 (49.41%)	27 (31.76%)	16 (18.82%)	0 (0%)	72 (84.7%)	10 (11.76%)	3 (3.52%)	0 (0%)
4	The need to move	Newly detected	1 (6.66%)	5 (33.33%)	9 (60%)	0 (0%)	7 (46.66%)	5 (33.33%)	3 (20%)	0 (0%)
		Old	11 (12.94%)	27 (31.76%)	43 (50.58%)	4 (4.7%)	56 (65.88%)	18 (21.17%)	7 (8.23%)	4 (4.7%)
5	The need to sleep	Newly detected	1 (6.66%)	2 (13.33%)	11 (73.33%)	1 (6.66%)	10 (66.66%)	3 (20%)	2 (13.33%)	0 (0%)
		Old	2 (2.35%)	51 (60%)	27 (31.76%)	5 (5.88%)	65 (76.47%)	11 (12.94%)	5 (5.88%)	4 (4.70%)
6	The need to dress	Newly detected	2 (13.33%)	7 (46.66%)	4 (26.66%)	1 (6.66%)	12 (80%)	1 (6.66%)	1 (6.66%)	1 (6.66%)
		Old	13 (15.29%)	34 (40%)	37 (43.52%)	1 (1.17%)	76 (89.41%)	7 (8.23%)	1 (1.17%)	1 (1.17%)
7	The need to maintain the temperature	Newly detected	13 (86.66%)	2 (13.33%)	0 (0%)	0 (0%)	15 (100%)	0 (0%)	0 (0%)	0 (0%)
		Old	81 (95.29%)	3 (3.52%)	1 (1.17%)	0 (0%)	85 (100%)	0 (0%)	0 (0%)	0 (0%)
8	The need to be clean	Newly detected	1 (6.66%)	5 (33.33%)	9 (60%)	0 (0%)	7 (46.66%)	5 (33.33%)	3 (20%)	0 (0%)
		Old	11 (12.94%)	43 (50.58%)	27 (31.76%)	4 (4.7%)	56 (65.88%)	23 (27.05%)	2 (2.35%)	4 (4.7%)
9	The need to avoid danger	Newly detected	0 (0%)	10 (66.66%)	4 (26.66%)	1 (6.66%)	14 (93.33%)	1 (6.66%)	0 (0%)	0 (0%)
		Old	7 (8.23%)	61 (71.76%)	12 (14.11%)	5 (5.88%)	66 (77.64%)	15 (17.64%)	4 (4.7%)	0 (0%)
10	The need to communicate	Newly detected	0 (0%)	0 (0%)	14 (93.33%)	1 (6.66%)	13 (86.66%)	1 (6.66%)	1 (6.66%)	0 (0%)
		Old	11 (12.94%)	64 (75.29%)	5 (5.88%)	5 (5.88%)	80 (94.11%)	4 (4.7%)	1 (1.17%)	0 (0%)
11	Need to practice religion	Newly detected	15 (100%)	0 (0%)	0 (0%)	0 (0%)	15 (100%)	0 (0%)	0 (0%)	0 (0%)
		Old	81 (95.29%)	3 (3.52%)	1 (1.17%)	0 (0%)	85 (100%)	0 (0%)	0 (0%)	0 (0%)
12	The need to be busy	Newly detected	0 (0%)	1 (6.66%)	9 (60%)	5 (33.33%)	15 (100%)	0 (0%)	0 (0%)	0 (0%)
		Old	2 (2.35%)	7 (8.23%)	65 (76.47%)	11 (12.94%)	82 (96.47%)	2 (2.35%)	1 (1.17%)	0 (0%)
13	The need to recreate	Newly detected	0 (0%)	0 (0%)	0 (0%)	15 (100%)	12 (80%)	2 (13.33%)	1 (6.66%)	0 (0%)
		Old	0 (0%)	0 (0%)	8 (9.41%)	77 (90.58%)	80 (94.11%)	5 (5.88%)	0 (0%)	0 (0%)
14	The need to learn	Newly detected	1 (6.66%)	4 (26.66%)	7 (46.66%)	3 (20%)	15 (100%)	0 (0%)	0 (0%)	0 (0%)
		Old	11 (12.94%)	48 (56.47%)	9 (10.58%)	17 (20%)	85 (100%)	0 (0%)	0 (0%)	0 (0%)

Ind. – Independence; Min. dep. – Mimimal dependence; Avg. dep. – Average dependence; Severe dep. – Severe dependence

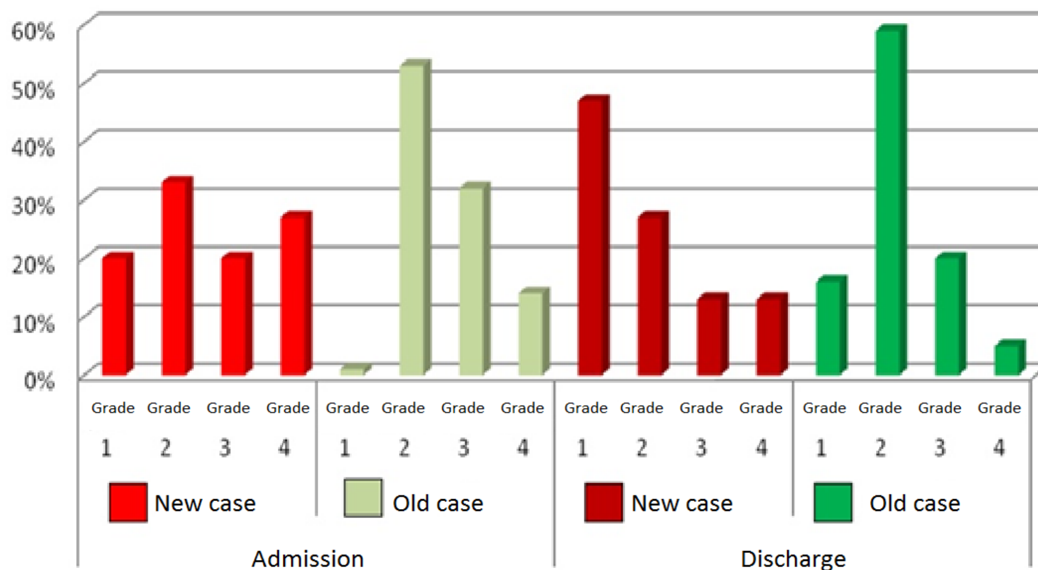

Figure 1. *Dependency degree for the need to breathe and have a proper circulation at admission vs. discharge (Grade 1 = independence; Grade 2 = minimum dependence; Grade 3 = average dependence; Grade 4 = severe dependence).*

Table 2. Degree of total dependence in achieving fundamental needs at hospital admission vs. Discharge.

Total dependence	Case	Admission	Discharge
Independence (14 pct)	Newly diagnosed	0	0
	Old	0	0
Minimum dependence (15 – 28 pct)	Newly diagnosed	6 (40%)	13 (87%)
	Old	33 (39%)	71 (84%)
Average dependence (29 – 42 pct)	Newly diagnosed	9 (60%)	2 (13%)
	Old	52 (61%)	14 (16%)
Severe dependence (43 – 56 pct)	Newly diagnosed	0	0
	Old	0	0

The distribution of patients according to the degree of dependence for the total dependence level comparatively at admission and discharge is given in Table 2.

Discussions

In terms of the progress in achieving independence for each of the fundamental needs, we noticed that partial dependencies have a similar evolution in newly diagnosed diabetes cases compared to the long standing diabetes cases. Thus, while the admission charts indicate a predominance of higher degrees of dependence, at 6 months after the discharge the curve moves to the left, towards smaller degrees of dependence. Patients in more advanced stages of the disease (old cases) have slightly higher percentages of dependency for each basic need (partial dependencies). There is a general tendency of all T2DM patients, regardless of disease stage, to have higher partial dependencies on admission due to the factors that depend on the nurse (lack of involvement in caring activities from the first day of admission), depend on the patient (in other words he "does not know, does not want or cannot") or due to factors that, according to nursing concepts, are beyond the nurse or patient (biological, psychological, social, spiritual). These factors need to be identified on admission in order to act on them in the nursing process.

We noticed that, in terms of total dependence, both for newly diagnosed and old diabetes patients there were 0 cases of total

independence and 0 cases of severe total dependence. As expected, the number of cases of average total dependence at admission is higher than at discharge and the number of cases of minimum total dependence is lower at admission than at discharge, regardless of the stage of disease evolution.

The nurse activity should be complementary to the medical activity and also an autonomous one: hygiene maintenance, communication, establishing the connection with the family, identification of individual psychology issues, his and his family's ability to cooperate, finding specific solutions depending on the individual's ability to understand, his desire to intervene in the maintenance of health, financial possibilities etc.

The most important autonomous nursing intervention is the therapeutic education, a non-pharmacological therapy, extremely important alongside the pharmacological therapy, which will be structured, patient-centered, taking into account the patient's degree of knowledge and needs, permanently performed and planned at regular intervals. It imposes the collaboration of the diabetes specialist nurse with the community nurse (currently not involved in the specific activity of diabetes – not trained) to see if the patient can put into practice the knowledge acquired during the therapeutic education sessions.

We appreciate that the educational activity is time consuming, but it is also of vital importance in diabetes. It should be carried out continuously and always target the shortcomings identified in the care of patients with diabetes. If the nurse is trained to effectively achieve interventions for the patient's need to learn and to keep their health, she will have an important contribution in T2DM management and will completes the care team effectiveness in this area.

Conclusions

Identifying the degrees of dependence by evaluating the 14 fundamental needs of human beings, has allowed us to plan nursing interventions for patients in the study group. Nursing interventions corresponded to both actual nursing diagnoses (NANDA International) and possible nursing diagnoses (prophylactic intervention).

The educational program (structured, patient-centered) followed by patients in the study group was the largest independent nursing intervention that brought highly significant statistical improvements of the degrees of addiction, at the 6 months evaluation.

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