Factors related to nursing diagnosis, ineffective self-health management, among diabetics*

Fatores relacionados ao diagnóstico de enfermagem autocontrole ineficaz da saúde entre diabéticos

Factores relacionados al diagnóstico de enfermería autocontrol ineficaz de la salud entre diabéticos

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ABSTRACT

Objective: To investigate the related factors of the nursing diagnosis, ineffective self-health management, in clients with Type 2 diabetes mellitus treated with oral antidiabetic (AO), receiving primary health care services, according to gender. **Methods:** A secondary analysis of database research conducted between January and July 2009, in the homes of 377 users of 12 family health centers in Fortaleza-CE. To determine the presence of the nursing diagnosis, an analogy was made between the test questions Measure Treatment Adherence and four of the five defining characteristics of the diagnostic search. **Results:** Men had a greater sense of powerlessness (30.4%) than women (18.4%) about the need for taking the AO (p = 0.034). Women were better able to understand the benefits of taking AO to ensure proper control of their diabetes (p = 0.002). **Conclusion:** Socioeconomic factors important in controlling the disease, such as excessive demand and social support deficit, were prevalent and significant among men.
Keywords: Patient compliance; Diabetes *mellitus* type 2; Hypoglycemic agents; Nursing diagnosis

RESUMO

Objetivo: Investigar os fatores relacionados ao diagnóstico de enfermagem autocontrole ineficaz da saúde em usuários, de serviço de atenção básica à saúde, com Diabetes *mellitus* tipo 2, tratados com antidiabéticos orais (AO), segundo o sexo. **Métodos:** Estudo de análise secundária de um banco de dados de pesquisa realizada, entre janeiro e julho de 2009, nos domicílios de 377 usuários de 12 centros de saúde da família de Fortaleza-CE. Para determinar a presença do diagnóstico de enfermagem foi realizada uma analogia entre as questões do teste Medida de Adesão ao Tratamento e quatro das cinco características definidoras do diagnóstico pesquisado. **Resultados:** Os homens tinham um sentimento de impotência maior (30,4%) que as mulheres (18,4%) acerca da tomada dos AO (p=0,034). As mulheres conseguiram perceber melhor os benefícios da tomada correta dos AO no controle do Diabetes (p=0,002). **Conclusão:** Fatores de caráter socioeconômico importantes no controle da doença como a demanda excessiva e *déficit* de apoio social foram predominantes e significativos entre os homens.
Descritores: Cooperação do paciente; Diabetes *mellitus* tipo 2; Hipoglicêmicos; Diagnóstico de enfermagem

RESUMEN

Objetivo: Investigar los factores relacionados al diagnóstico de enfermería autocontrol ineficaz de la salud en usuarios, del servicio de atención básica a la salud, con Diabetes *mellitus* tipo 2, tratados con antidiabéticos orales (AO), según el sexo. **Métodos:** Estudio de análisis secundario de un banco de datos de investigación realizada, entre enero y julio del 2009, en los domicilios de 377 usuarios de 12 centros de salud de la familia de Fortaleza-CE. Para determinar la presencia del diagnóstico de enfermería fue realizada una analogía entre las preguntas del test Medida de Adhesión al Tratamiento y cuatro de las cinco características definidoras del diagnóstico investigado. **Resultados:** los hombres tenían un sentimiento de impotencia mayor (30,4%) que el de las mujeres (18,4%) respecto a la toma de los AO (p=0,034). Las mujeres consiguieron percibir mejor los beneficios de la toma correcta de los AO en el control de la Diabetes (p=0,002). **Conclusión:** Los factores de carácter socioeconómico importantes, en el control de la enfermedad, como la demanda excesiva y *déficit* de apoyo social fueron predominantes y significativos entre los hombres.
Descriptores: Cooperación del paciente; Diabetes *mellitus* tipo 2; Agentes hipoglucémicos; Diagnóstico de enfermería

INTRODUCTION

Currently, Diabetes *mellitus* type 2 (DM 2) is considered one of the main public health problems in Latin America, both due to the number of people affected by impairments and premature mortality, and the costs involved in the management and treatment of its complications[1]. Nowadays, about 78% of diabetic individuals in Latin America present inadequate glycaemic control, characterized by fasting venous glycaemia of $\geq$110mg/dL[2].

Another current concern is the growth of mortality due to DM among men. According to data from Brazil's Department of Health, between 1980-2005, it increased from 9.6% to 19.5%, with a variation of 103.6%, the highest among 34 registered causes of death. However, only seven Brazilian capitals present a higher DM diagnosis among men[3]. A previous research indicates prevalence of 5.7% and 3.5% for females and males, respectively[4].

Considering such data, the following conclusion is drawn: if a larger number of men who have DM die when compared to women, even though men are the minority, it is likely that they present a worse metabolic control. This is supported by the National Policy for Men's Health, from Brazil's Department of Health, which affirms that men's non-adherence to integral health activities leads to the increase of diseases and mortality in this group[3].

Considering such context, the amount of drugs used to try and establish normoglycaemia for these subjects is enormous. However, this is annulled upon the non-adherence presented by these patients in relation to the drugs[5]. Meta-analyses show that the adherence to the medical treatment among individuals with DM 2 is of 67.5%, considered low, when compared to the adherence to other treatments[6].

One of the ways nurses can provide quality and organized healthcare to a DM 2 patient is by using the nursing healthcare systematization (NHS)[7]. One of its elements is the nursing diagnosis, defined by the *North American Nursing Diagnosis Association* (NANDA), as a clinical judgement of individual, families and the community's responses to the vital processes, and current or potential health problems. Therefore, it is possible to affirm that nurses diagnose human responses/experiences upon the health-illness process[8].

Within the problematic regarding medical treatment adherence, the nursing diagnosis that is best suited for patients who do not effectively adhere to medical treatments is the Ineffective Health Self-Control, defined as dissatisfactory regulation and integration of a therapeutic regimen standard to daily life, for diseases and sequelae treatment, in order to achieve health specific goals[8].

Considering the DM 2 scenario, an aggressive glycaemic control, besides reducing diabetics' vascular complications along time, is responsible for decreasing in costs. This emerges when patients adhere to the use of OA and/or insulin. Nevertheless, it is important to highlight that demographic and self-medication factors, besides patients knowledge of diabetes are involved in the adherence phenomenon[6].

Identifying human responses with regard to medication intake should be a continuous process, especially among DM 2 patients assisted at primary healthcare centres, so that nurses can discover which factors are involved in the non-adherence to the medical treatment, and consequently interfere to stop micro and macro-vascular complications.

It is important that studies associating nursing diagnoses and certain characteristics of the studied group are performed. This belief is justified by the benefits resulting from these researches, such as acquiring knowledge on risk factors and factors related to the problem in question[9]. Besides, there is a lack of publications that compare gender and DM[4]. Therefore, the objective of the present study is to investigate factors related to the nursing diagnosis "Ineffective Health Self-Control" in primary healthcare centre users with Diabetes *mellitus* type 2, treated with oral anti-diabetics, according to gender.

METHODS

The present is a supplementary study, which was developed based on the secondary analysis of the research "Oral anti-diabetic therapy adherence among users of the primary healthcare network of Fortaleza-Ceará" database. The mentioned research took place between January and July 2009, in 12 family healthcare centres, located in Fortaleza. The metropolis, which is in the Northeast region of Brazil, is divided in six geo-economic areas, and had 173,000 diabetic individuals registered in its primary healthcare network, in 2008. Therefore, in order to obtain representative data on the subject in that city, 12 DM Healthcare Centres were chosen, according to convenience, two in each of the six city areas. The selected healthcare units are located in different neighbourhoods, with different infra-structures, services offered, and socioeconomic situation.

The sample was distributed into conglomerates, and for its calculation, the formula for infinite populations was used. The variable "non-adherence to medical therapy among primary healthcare centre diabetic users" was chosen as the outcome, and its adopted prevalence was of 60%[10], the significance level and the sample

error were (α=0,05) and 5%, respectively. The sample size was of 369 diabetic individuals. A 10% rate was added to this number, considering data loss, refusals, hospitalizations, abandonment, incorrect information and/or not available information. However, because some users wanted to participate in the study, the sample was enlarged to 437 subjects.

As the present study objective was to identify factors related to the nursing diagnosis "Ineffective Health Self-Control", the final sample of this investigation was comprised of data from the 377 classified subjects, as non-adherent to medical treatments with OA. In order to assess the hypoglycaemic medication intake, the Treatment Adhesion Measurement Test (TAM) was applied to each DM 2 patient, in their domiciles[11].

In order to do so, the investigated individuals answered to the following yes/no questions:

1. Have you ever forgotten to take the DM 2 pills?
2. Have you ever been negligent when taking the DM 2 pills?
3. Have you not taken the DM 2 pills, at any occasion, for having felt better?
4. Have you not taken the DM 2 pills, on your own initiative, for having felt worse?
5. Have you ever taken more than one or several DM 2 pills, on your own initiative, for having felt worse?
6. Have you ever interrupted the medical treatment for having forgotten to buy the medication?

The subjects who answered "no" to all the above questions were considered adherent to the treatment[11].

In order to determine the presence of the nursing diagnosis "Ineffective Health Self-Control", an analogy between the TAM questions and four or five defining characteristics of the researched diagnosis was made, as demonstrated on Chart 1. When at least one of the defining characteristics was present, the above mentioned nursing diagnosis was considered.

Further on, a check list instrument was created, with the 16 factors related to the referred diagnosis, according to NANDA 2009-2011 version. The check list was

assessed by three nursing PhDs, in order to confirm its applicability. On that occasion, the evaluators verified that, based on the database information, it would only be possible to investigate ten out of the 16 factors related to the researched diagnosis, namely: Therapeutic Regime Complexity, Knowledge Deficit, Economic Difficulties, Impotency, Perceived Seriousness, Excessive Demand, Social Support Deficit, Healthcare System Complexity, Perceived Benefits, and Perceived Barrier.

The Therapeutic Regimen Complexity was considered present when patients had at least one comorbidity associated to DM 2, and took OA amounts ≥ four times a day.

In order to identify the Knowledge Deficit, the Batalla Test was used to assess patients' knowledge on their disease. This test was adapted to DM 2 and involved three questions: Is DM 2 a lifelong illness? Can DM 2 be controlled with a diet and medication? Mention two or more organs that can be affected by the DM. Those who did not correctly answer all questions were classified as individuals with a knowledge deficit[12].

The Economic Difficulties factor was comprised of patients who belonged to classes D and E, according to the Brazilian Economic Classification Criteria[13]. The Impotency factor was detected when patients needed relatives to help them take medications. As to the Perceived Seriousness factor, it was considered present when subjects affirmed DM 2 is a lifelong disease.

The Excessive Demand was considered present when individuals affirmed they were responsible for the family income source. At to the Support Deficit, it was mentioned when subjects did not regularly participated (at least once a week) in some social support network, such as neighbours associations, or groups, such as self-help, religious, and politics groups, among others.

In order to try and measure the Healthcare System Complexity, the following questions were asked to clients: Did you understand the guidelines on how to take the DM 2 pills? How often do you search for the DM 2 service centre? Based on these questions, the

Chart 1 – Analogies between the TAM and the defining characteristics of the "Ineffective Health Self-Control" nursing diagnosis. Fortaleza-Brazil, 2009.

Questions in the TAM* Test	Defining characteristics of the Ineffective Health Self-Control nursing diagnosis
1	Expressed difficulty with the prescribed regimen
2	Failure to include the treatment to the daily life
3	Failure to take action to reduce risk factors
4 and/or 5	Ineffective daily life choices to reach health goals

* MAT - A measure of adherence to treatment

previously mentioned factor was considered when subjects answered "Yes" to the first question and al least "once every two months" to the second question. Finally, the Perceived Benefits factor was considered present when patients knew that the disease could be controlled with a diet and medication, and the Perceived Barriers, when they reported side effects caused by the medication.

Data were triple typed and stored in an *Excel* database. The information processing occurred through the SPSS software, version 17.0. The adopted confidence interval was of 95%. When analysing the factors related to the Ineffective Health Self-Control Diagnosis in association with the category variables, Fisher's Exact Test and the Chi-Square Test were used.

The research project was approved by Research Ethics Committee of the Health Sciences Centre, Universidade Federal do Ceará, according to Protocol n.° 47/09.

RESULTS

The present research results showed a larger participation of women (69.5%), white (47.3%) and mixed race individuals (35.3%). Subjects between 18 and 92 years old were studied. They were distributed among the following age brackets: 18-59 (41.1%), 60-69 (29.5%), 70-79 (20.1%) and 80-92 years old (9.3%). The individuals' average age was 63.1 years old (SD±11.6). Another characteristic found in the studied sample that deserves to be mentioned is education. It was possible to verify that the average education time was 4 years and 3 months (SD±3.7). The educational background is divided among a predominant group with incomplete basic education (37.9%) and functionally illiterate subjects (23.5%), with less than 6.0% having finished this educational stage.

With regard to marital status, more than half of the sample was either married or living in a common law partnership (56.5%), while the minority was single (6.9%); 85.6% had their own house; about half of the subjects studied lived with a nuclear family, comprised of a partner, children and/or grandchildren (45.8%), and 69.0% were catholic.

Considering the socioeconomic panorama, it was possible to verify a low income scenario, which can be demonstrated by the supremacy of the C (40.9%) and D (47.9%) economic classes. The average monthly family income was R$ 783.1 Reais (SD±574.5). The main OA used were metformin (22.9%), glybenclamid (21.5%), and the association of both (43.5%). The average number of such medication taken a day was 3.0 (SD±1.7) daily pills.

The "Ineffective Health Self-Control" diagnosis prevalence was of 86.3%, 73.1% of which were females

(p=0.386). The predominant related factors investigated, that is, those above 70%, were: Excessive Demand (70.2%), Perceived Seriousness (72.4%), Knowledge Deficit (74.8%), Healthcare System Complexity (84.6%), Social Support Deficit (85.1%) and Perceived Benefits (89.5%).

When analysing the distribution of the factors related to the Ineffective Health Self-Control diagnosis, based on gender, the following findings were verified (Table 2): non-adherent male diabetic individuals present a higher impotency feeling (30.4%) than women (18.4%) upon the DM 2 medical therapy (p=0.034), besides, they also report a lack of social support (p= 0.016), and excessive demand (p= 0.000).

Even when classified as non-adherent to the OA therapy, women could better perceive the benefits of the correct medication intake in the DM 2 metabolic control (p=0.002)

Table 1 – Factors related to the Ineffective Health Self-Control nursing diagnosis for DM 2 patients who do not adhere to the OA treatment. Fortaleza-CE, 2009.

Factos	n*	%	IC-95%
Impotency Feeling			
Yes	83	22.0	18.1-26.7
No	286	75.9	71.4-80.3
Knowledge Deficit			
Yes	282	74.8	70.1-79.1
No	95	25.2	21.0-30.0%
Therapeutic Regimen Complexity			
Yes	125	33.3	28.6-38.4
No	250	66.7	61.6-71.4
Economic Difficulties			
Yes	194	51.9	46.7-57.0
No	180	48.1	43.0-53.3
Perceived Seriousness			
Yes	273	72.4	67.6-76.9
No	104	27.6	23.2-32.4
Social Support Deficit			
Yes	321	85.1	81.1-88.6
No	56	14.9	11.5-18.9
Healthcare System Complexity			
Yes	319	84.6	82.4-88.6
No	57	15.4	11.6-18.6
Perceived Benefits			
Yes	332	89.5	85.9-92.4
No	39	10.5	7.7-14.2
Perceived Barriers			
Yes	77	20.4	16.5-24.9
No	300	79.6	75.1-83.5
Excessive Demand			
Yes	265	70.2	65.7-74.5
No	112	29.8	25.5 -34.3

* Only data from subjects that answered the questions were computed

Table 2 – Association of the factors related to the Ineffective Health Self-Control diagnosis among diabetic individuals who do not adhere to the oral antidiabetic treatment according to gender. Fortaleza-CE, 2009.

| Factors | Gender | | | | P value |
| | Female | | Male | | |
	n*	%	n*	%	
Impotency Feeling					
Yes	48	18.4	35	30.4	0.034**
No	207	79.3	78	67.8	
Knowledge Deficit					
Yes	201	76.7	81	70.4	0.122***
No	61	23.3	34	29.6	
Therapeutic Regimen Complexity					
Yes	218	83.2	88	76.5	0.084***
No	44	16.8	27	23.5	
Economic Difficulties					
Yes	147	56.7	48	41.7	0.086**
No	114	43.3	66	38.3	
Perceived Seriousness					
Yes	191	74.6	82	73.9	0.489**
No	65	25.4	29	26.1	
Social Support Deficit					
Yes	216	82.4	105	91.3	0.016***
No	46	17.6	10	8.7	
Healthcare System Complexity					
Yes	91	35.1	38	34.8	0.582**
No	168	64.8	73	65.2	
Perceived Benefits					
Yes	241	92.7	91	82.0	0.002***
No	19	7.3	20	18.0	
Perceived Barriers					
Yes	56	21.5	20	17.4	0.223***
No	205	78.5	95	82.6	
Excessive Demand					
Yes	165	63.0	110	84.0	0.000**
No	101	35.0	16	13.0	

* Only data from subjects that answered the questions were computed ** Chi-square Test ** Fisher's Exact Test

DISCUSSION

Diagnoses are essential for the future of professional and evidence-based nursing care, besides favouring efficiency, safety and personalization of patient care. With regard to subjects with DM 2, once factors that contribute to the non-adherence to treatments are recognized through the Ineffective Health Self-Control diagnosis, nurses will be able to identify the main problems related to such behaviour. Moreover, when they associate them to the gender issues, the applied treatment will be more successful, due to its specificity.

Researches performed to verify the relationship between the adherence behaviour and patients' external,

relational, and internal factors, have been receiving attention in the literature[14]. However, the variable methodological quality, and the absence of a golden standard to measure adhesion might result in misjudgements regarding the studied adhesion and non-adhesion factors, mainly in quantitative researches[15].

Therefore, the fact that there are partial result divergences between the present study and two other similar publications consulted comes with no surprise. The first study did not verify any significant association among the use of OA and socio-demographic, clinical, and patient factors. The second study concluded that the main factors related to the non-adherence to the treatment were the duration of the disease and the

therapeutic regimen complexity[16].

In relation to the studied nursing diagnosis, the socio-demographic item was prevalent through the factors: Knowledge and Social Support Deficit, Economic Difficulties, and Excessive Demand.

In this investigation, the social support deficit (p= 0.016) and the excessive demand (p= 0.000) were higher for non-adherent men.

One of the plausible explanations to elucidate why men are predominantly non-adherent in relation to the above mentioned factors is that women tend to care more for themselves, and are historically and anthropologically responsible for their family's healthcare. They are more attentive to diseases symptoms, and visit primary healthcare centres earlier and more often than men. Finally, the existence of female-focused healthcare programs in the Family Healthcare Strategy in Brazil favours the early diagnosis and a better DM 2 follow up for women[4,17]. Nevertheless, it is relevant to say that there are investigations where no significant DM 2 treatment adhesion differences were found based on gender[18-20].

In the present research, the excessive demand factor illustrated who was the main family provider and males were, in the majority of times, responsible for providing. There are evidences that show a higher prevalence of DM 2 and lower adhesion to the treatment, mainly among males, if they are from a lower socio-economic level of the population, which could be associated to the work division based on gender[4-5,21]. Moreover, it is important to consider that their budget is, more often than not, insufficient to afford the expenses related to the DM 2 therapy, such as those related to the diet, skin, and shoes, among others[10].

Another question to be thought over is the fact that aspects such as education and cultural beliefs, for example, might interfere in the control of the diabetic therapeutic regimen[22]. Therefore, the participation in operational groups, which characterized the factor "social support deficit" in the present study, can be beneficial when providing integral healthcare to diabetics, for the group's cohesion and the psychological intimacy environment established may favour the discussion of beliefs and feelings related to the disease and its treatment. However, the participation of males with DM in such activities was smaller in comparison to women[23].

The impotency factor, determined in this study by the need of help to take OA, could be conditioned to age and to the number of medicines taken for DM 2, as well as the associated comorbidities. In fact, those who have an OA monotherapy regimen or receive insulin present 36% higher adhesion in comparison to those who use several medicines[24]. Furthermore, subjects with DM 2 who live alone face other problems besides those

related to the disease, thus the involvement of a family member facilitates the medical treatment adhesion[25]. With regard to the gender, it is possible that help from women and/or relatives might have been incorporated to the daily life activities, mainly when patients are elderly males.

Another significant finding in the present research was the perceived barrier factor, which approached the diabetic individual's awareness of his/her disease and therapeutic activities, such as diet and eating habits, which were less perceived by male patients. No investigations associating this fact with gender were found. The knowledge diabetics had about their disease, however, has been explored in Brazil, and results showed that 28.6% and 32.2% of diabetic individuals did not know the cause or effect of medicines used in their therapies, respectively[26-27].

Chronicle or long-term treatments generally present a lower adhesion, since therapeutic regimens demand great efforts from patients, who have to change life habits to meet the treatment demands, in some circumstances. In the case of men, qualitative researches verified several reasons for it, but generally speaking, it is possible to group low adhesion causes in two main determining groups, namely: socio-cultural barriers, and institutional barriers. Hence, the feeling of "losing" motivation and the difficulty to access healthcare centres can illustrate the situation[3].

Therefore, it is important for these individuals to have the correct answers to their doubts on the clinical management of their problem. This enhances professional credibility, and consequently decreases the number therapeutic doubts, for diabetics will not have self-care parameters if the information is inaccurate or absent[28].

CONCLUSION

The present article presented frailties when surveying the studied nursing diagnosis "Ineffective Health Self-Control. Firstly, there was neither a nursing appointment, nor were all factors related to the mentioned diagnosis used. Secondly, it was not possible to associate the surveyed factors prevalence with important aspects of the DM 2 metabolic control, such as: nutritional state, regular practice of physical activities, diet, and venous glycaemia. Such limitations are due to the secondary aspect of data used in this study.

Even upon these limitations, it was valid for revealing that socio-economic factors are important for the disease control, i.e., excessive demand, and social support deficit, which were significant and predominant among men. The same was observed when questions related to the subject were asked, such as those related to impotency and lack

of benefits perception when treating the disease. Notwithstanding, new studies will be necessary to verify the prevalence of all factors related to the diagnosis among DM 2 patients and their relation with the medical adhesion.

It was possible to verify that men felt more impotent than women with regard to the OA intake. Women were able to better perceive the benefits of correctly taking the OA to control diabetes.

Considering the results found, it is necessary for primary healthcare professionals to be careful when dealing with male DM 2 patients, since socio-cultural and demographic components may interfere in the DM 2 metabolic control, causing patients to not come back to the healthcare centre, not understand the guidelines, and impact on their feelings upon the disease limitations, and the acquisition of therapeutic items, among others. Such aspects also depend on therapeutic communication, provided through domicile visits and supervision of the OA intake.

The medical treatment adhesion problem among diabetic individuals requires a multi-professional strategy, thus, another important aspect is the qualification of those with direct contact with the community, the health agents, who daily go to patients' houses. Teaching these professionals, as well as applying simple indirect adherence methods may help detecting non-adhesion cases in the community. Further on, such findings could be confirmed through a nursing appointment and the Ineffective Health Self-Control diagnosis.

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