Assessment of self-care competence of elderly people with diabetes*

AVALIAÇÃO DA COMPETÊNCIA DE IDOSOS DIABÉTICOS PARA O AUTOCUIDADO

EVALUACIÓN DE LA COMPETENCIA DE ANCIANOS DIABÉTICOS PARA EL AUTOCUIDADO

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ABSTRACT

This descriptive, cross-sectional and correlational study aimed to assess the self-care competencies of senior citizens with diabetes using the Scale to Identify Diabetes Mellitus Patients' Competence for Self-Care and personal factors associated with it. The study population consisted of seniors registered in primary healthcare units in Fortaleza, CE, Brazil. Only 6% of the patients were considered to have diabetes self-care competence. Low educational level and decreased visual acuity were identified as factors that influenced these low scores. The results, which showed that a small number of seniors were considered competent to practice self-care, indicated the importance of developing health promotion activities targeted to this population, assessing skills and encouraging self-care practices to facilitate the planning of health interventions.

RESUMO

Estudo descritivo, de corte transversal e correlacional, que objetivou avaliar as competências de idosos com diabetes para o autocuidado, por meio da utilização da Escala para Identificação da Competência do Diabético para o Autocuidado, e os fatores pessoais associados ao resultado. A população do estudo foi composta por idosos cadastrados nas unidades básicas de saúde de Fortaleza, CE, Brasil. Da amostra, apenas 6% dos idosos foram considerados competentes para o autocuidado em diabetes e os fatores que se destacaram como influenciadores de baixa pontuação foram a baixa escolaridade e a diminuição da acuidade visual. Conforme os resultados, devido ao reduzido número de idosos considerados competentes para a prática do autocuidado, verifica-se a importância do desenvolvimento de ações de promoção da saúde direcionados para essa parcela da população, devendo-se estimular a prática do autocuidado, bem como avaliar as competências para execução da mesma, de modo a facilitar o direcionamento de ações de saúde.

RESUMEN

Estudio descriptivo, transversal, correlacional, objetivando evaluar la competencia de ancianos diabéticos para el autocuidado mediante la utilización de la Escala para Identificación de Competencia del Diabético para el Autocuidado, y los factores individuales asociados al resultado. La población se compuso de ancianos registrados en las unidades básicas de salud de Fortaleza-CE, Brasil. De la muestra, sólo 6% de los ancianos fueron considerados competentes para el autocuidado en diabetes, y los factores destacados como influyentes en la baja puntuación fueron: la baja escolarización y la disminución de la agudeza visual. Conforme los resultados, debido al escaso número de ancianos considerados competentes para practicar el autocuidado, se verifica la importancia del desarrollo de acciones de promoción de salud dirigidos a este segmento poblacional, haciéndose necesario estimular la práctica del autocuidado, así como evaluar las competencias para su ejecución, de modo tal de facilitar la orientación de acciones de salud.

DESCRIPTORS
Aged
Diabetes mellitus
Self care
Public health nursing

DESCRITORES
Idoso
Diabetes mellitus
Autocuidado
Enfermagem em saúde pública

DESCRIPTORES
Anciano
Diabetes mellitus
Autocuidado
Enfermería en salud pública

* Extracted from thesis "Avaliação de competência de idosos diabéticos para o autocuidado", Federal University of Ceará, 2009.

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www.scielo.br/reeusp

Received: 02/18/2012
Approved: 08/17/2012

INTRODUCTION

Diabetes Mellitus (DM) is one of the most prevalent diseases among the chronic degenerative pathologies that afflict senior citizens. It requires continuous care with medication and may affect a patient's functional capacity, autonomy and quality of life[1].

One major aspect of DM treatment is self-care because it improves patient health and reduces hospitalization costs and complications. Self-care requires behavioral modification, which, coupled with guidance and medication, controls the disease. Self-care involves a partnership between patients and healthcare workers[2].

Self-care can be viewed as a practice performed by individuals for their own benefit, to maintain life and well-being and is a key element in the proper maintenance of care for assessable chronic pathologies. The Scale to Identify Diabetes Mellitus Patients' Competence for Self-Care (ECDAC) instrument was designed using the concept of competence provided by Orem's theory[3] to assess the competencies required to implement a self-care regimen directed toward DM patients.

ECDAC is composed of 27 items divided into three subscales that assess physical, mental, and motivational self-care abilities in regard to diabetes[4].

One's ability to engage in self-care is conditioned by many factors, including age, stage of development, life experience, socio-cultural orientation, health and available resources[3]. In this context, healthcare workers delivering care to DM patients should consider all of these factors. Notably, regarding age, elderly individuals with DM should actively participate in their treatment and be held accountable in the healthcare process, developing competencies to implement self-care. Nurses providing care to DM patients need to identify self-care skills or deficits, in addition to personal characteristics, and adapt the treatment accordingly[5].

In this context, healthcare workers delivering care to DM patients should consider all of these factors. Notably, regarding age, elderly individuals with DM should actively participate in their treatment and be held accountable in the healthcare process, developing competencies to implement self-care.

Competence is one's ability or capacity to perform specific activities, and make decisions in the face of certain facts or events[3]. Evaluating seniors' DM self-care competencies eases the direction of care practices and the planning of interventions performed by nurses and other healthcare workers.

METHOD

This exploratory, cross-sectional study was conducted between February and October 2009 in six Family Health Units, which were chosen by clusters (elementary units that were clustered into sampling units) in Fortaleza, CE, Brazil. The study's population was composed of senior citizens with DM who were monitored and registered by Family Health Units.

The sample comprised 100 seniors who met the following inclusion criteria: aged 60 years or older, enrolled in the chosen health unit with a confirmed diagnosis of type 2 DM, and under pharmacological or non-pharmacological treatment for at least four years. Individuals who were unable to answer questions, diagnosed with diseases or conditions that impaired cognition, or with acute functional dependency that compromised self-care were not included.

The instruments used to collect data were a form addressing socio-demographic variables (age, education, number of people living in the home, family income) and clinical variables (time since diagnosis, type of DM treatment, exercise, and ECDAC).

ECDAC is composed of three subscales: I) physical capacity, which assesses visual acuity, color sensitivity, manual dexterity, and sensitivity in the lower limbs; II) mental capacity, which assesses reading, attention, memory, and knowledge concerning DM; and III) motivational capacity, which assesses self-esteem and self-care motivation. The answers in scales I and II range from 1 to 4, where 1 indicates the worst level of development of self-care competence in diabetes and 4 indicates the best level. The answers for subscale III are classified as (4) always, (3) many times, (2) seldom, and (1) never.

A guide to apply ECDAC was also used. Some adaptations were required because of current changes related to the clinical care provided to diabetic individuals. The Jaeger card, recommended by the Brazilian Ministry of Health, replaced the optometric card used in the original version. The Holmgren test, which uses wool skein to assess one's sensitivity to colors, was replaced by basic color cards.

Individuals were classified as apt in subscales I and II according to the following scores: 11 to 16 points in subscale I (physical capacity) and 25 to 44 points in subscale II (mental capacity).

The following parameters were used for subscale III[6]: 1) those scoring from 11 to 30 points were considered to have a self-care motivation deficit; 2) those scoring from 31 to 39 were considered to have self-care motivation; 3) and those scoring from 40 to 44 were considered to have high self-care motivation.

Scores from 78 to 108 were required for the ECDAC total score (sum of the three subscales) to be considered satisfactory.

The data were collected from March to July 2009 through home visits conducted by a nurse and seven properly trained undergraduate students and analyzed using the Statistical Package for the Social Sciences (SPSS)® version 14.0, is a registered trademark and the other product names are the trademarks of SPSS Inc. The manufacturer is SPSS Inc. in Chicago, United States of America. The data were then organized in tables and presented in the form of descriptive and inferential figures. The Mann-Whitney U-test and Kruskal-Wallis test were used for inferential analyses.

The study was approved by the Institution Review Board at the Federal University of Ceará (Process No. 17/09). All of the participants signed free and informed consent forms.

RESULTS

The following patient demographics were noted: 76% were women; 43% were married; 36% were widowed; 77% of the widowed individuals were women; the average age was 71 years (standard deviation = 6.4 years old); 37% were illiterate; 52% completed primary/middle school; 2% had bachelor's degrees; 36% earned between R$ 465.00 and R$ 930.00 ; 73% were retired, and 5% lived alone.

As for DM, the time since diagnosis ranged from four to 46 years, with an average of 10 years (standard deviation=6.9 years); 88% of the individuals used only oral anti-diabetic medication, and 2% used *Neutral Protamine Hagedorn* insulin(NPH insulin). Regarding help received from others during treatment, 55% of the patients did not receive any help with treatment, and 30% received help from their children. Prescribed diets were complied with by 40% of the patients, while 9% did not follow their diets for financial reasons. Regarding exercise, 64.2% reported walking, 17.9% reported performing hydro gymnastics, and 17.9% reported other types of exercise.

The results of ECDAC indicated that only 6% were competent in self-care, with an average of 69.6 points and standard deviation of 6.95. When separately analyzed, the percentage of competent individuals varied according to the subscale. All of the individuals (100%) were considered to be competent on subscale I because the average score was 14.44, with a standard deviation of 1.96. On subscale II, 38% were considered to be competent, with an average of 23.2 and standard deviation of 5.72. On subscale III, 31% presented a deficit in self-care motivation, and 69% presented average self-care motivation, with an average of 31.98 and a standard deviation of 3.98.

On subscale I, 35% scored 2 in relation to visual acuity. These individuals identified only the points from J3 to J6 on the Jaeger card from a distance of 35 m, which indicated impaired visual acuity, while 30% identified all the points. In terms of color sensitivity, 92% were able to distinguish and identify the colors of the cards presented, while 92% and 97% scored satisfactorily in foot sensitivity and manual dexterity, respectively.

On subscale II, for the *reading ability* item, 47% were able to read the text fluently. In regard to attention span and memory, when the participants were asked to repeat the order of seven numbers, 60% repeated the numbers with more than one error. Regarding diabetes knowledge, 33% correctly answered at least two items about the disease, and 57% identified at least one of the methods most frequently used to identify abnormalities and control diabetes.

On subscale II, regarding the participants' ability to recognize diabetes symptoms and conceptualizations, 38% did not identify the signs of hypoglycemia. Regarding the main situations that can result in hypoglycemia, 68% answered they did not know, and 44% were unable to identify such situations. No diabetic symptom was recognized by 43% of patients, and 46% did not know what to do when experiencing such signs. Table 1 presents the results associated with subscale III.

Table 1 – Distribution of the answers provided to subscale III by seniors with diabetes – Fortaleza, CE, Brazil, 2009

Item	Answers			
	Always	Many times	Few times	Never
	N	N	N	N
I like myself	59	31	7	3
I think of myself first	28	44	15	13
I consider myself to be a burden	8	11	24	57
I consider myself unable to help other people to accomplish something	11	13	26	50
I do the things required to keep myself healthy	65	27	7	1
I acknowledge my diabetes	45	10	15	30

A significant association was found in the analysis of the potential relationship among the ECDAC and socioeconomic and clinical variable scores concerning the *education* and *visual acuity* variables.

An association between ECDAC and education revealed a statistically significant difference ($p<0.05$) regarding subscale I ($p=0.03$) and subscale II ($p=0.001$). A statistically significant difference was found in five of the 11 items that subscale II addressed: reading capacity ($p=0.000$), knowledge concerning diabetes ($p=0.001$); methods to treat diabetes ($p=0.006$); situations that raise blood sugar levels ($p=0.001$); attention span and memory ($p=0.024$). No statistical significance was found on subscale III in any of the related items.

Table 2 – Relationship with ECDAC according to the participants' level of education – Fortaleza, CE, Brazil, 2009

Scale's items	P-value*
Subscale I – Physical Capacity	
Total physical capacity subscale	0.036
Subscale II –Mental Capacity	
Reading capacity	0.000
Knowledge concerning diabetes	0.001
Known methods of DM treatment	0.006
Main situations that may increase blood sugar levels in a diabetic individual	0.001
Attention span and memory	0.024
Total mental capacity subscale	0.001
Total ECDAC	0.001

*Kruskal-Wallis test

An association was also found between visual impairment and ECDAC (p=0.017), as with subscale I (p=0.003). Association in subscale II was only found in relation to the item *Main situations that may increase blood sugar levels in a diabetic individual* (p=0.029), while subscale II showed association with the item *I consider myself to be a burden* (p=0.022).

Table 3 – Relation of ECDAC's items according to reported visual acuity – Fortaleza, CE, Brazil, 2009

Scale's items	P- value*
Subscale I – Physical capacity	
Visual acuity	0.037
Color perception	0.553
Foot sensitivity	0.110
Manual dexterity	0.529
Total of physical capacity subscale	0.003
Subscale II –Mental Capacity	
Reading capacity	0.017
Knowledge concerning diabetes	0.004
Knowledge of methods that identify abnormalities and control diabetes	0.629
Knowledge of DM treatment methods Signs that diabetic individuals may experience if sugar levels are too low	0.107
Main situations that may diminish sugar levels	0.062
What diabetic individuals should do when experiencing hypoglycemia	0.953
Main situations that may raise sugar levels	0.289
Signs diabetic individuals may manifest if sugar levels are too high	0.031
What diabetic individuals should do when experiencing hyperglycemia	0.401
Attention span and memory	0.685
Total of mental capacity subscale	0.305
Total da subescala de capacidade mental	0.029
Subscale III – Motivational Capacity	
I like myself	0.600
I think of myself first	0.491
I consider myself to be a burden	0.022
I consider myself unable to help other people to accomplish something	0.098
I do the things required to keep myself healthy	0.298
I feel like doing things that help to control my diabetes	0.053
I am interested in learning about my diabetes	0.128
I am concerned to eat only food that keeps me healthy	0.104
I need help to apply my insulin or control my diet	0.991
I consider recommendations to live with diabetes	0.331
I acknowledge my diabetes	0.262
Total of the motivational capacity scale	0.536
Total ECDAC	0.017

*Mann-Whitney U-test

DISCUSSION

The socioeconomic and clinical characteristics observed in this study are similar to those found in other studies addressing the same population (i.e., female gender, low educational level, and a larger number of retired individuals with monthly family income below the national average)[7-9].

Self-care competence was observed in relation to three ECDAC components in only 6% of the participants. Although there are many possible explanations for this result, two stand out: first, there is a need to implement clinical interventions that will enable these individuals to improve self-care competence; second, there is a need to demand that healthcare professionals, who are responsible for the implementation of such interventions, have communication skills and knowledge concerning behavioral modification, health education and counseling[10].

Among healthcare professionals, nurses have historically developed studies and research to improve their patients' self-care and are key elements in actions of this nature among DM patients[11].

The assessment per subscale showed that physical capacity, more specifically, visual acuity, was impaired in many seniors, although we were unable to confirm whether such impairment resulted exclusively because of DM; because of the aging process, other pathologies, such as cataracts, may affect individuals[12]. Visual impairment among the senior citizens in this study compromised self-care actions, particularly the administration of antidiabetic medication and insulin[13].

Note that maintaining foot sensitivity should be an aspect explored during health promotion actions to maintain this condition. Preserving manual dexterity ensures that patients, particularly those who are insulin dependent, are able to administer the appropriate insulin dose.

On subscale II, 38% of the patients scored satisfactorily and were considered competent in the mental capacity dimension, which could be explained by their education levels. Reading (along with cognitive aspects) is required in this subscale, which is assessed through the memorization of numbers.

Subscale II also required knowledge concerning diabetes, symptoms, and examination methods. The study's results indicated there is a deficit of knowledge regarding these aspects. Hence, the literature recommends that patients with chronic diseases should receive support in relation to their pathology, particularly to ensure self-care actions, while healthcare workers are responsible to ease the acquisition of such knowledge and should be included in the therapeutic plan for disease management[14-17].

The scores obtained by the studied seniors on subscale III indicate a deficit in self-care motivation. The reasons that they do not present self-care motivation may be associated with the chronic disease itself. An intervention in the case of chronic diseases that do not present symptoms at the beginning may reverse or limit the extent of damage. However, it is difficult to motivate patients to become interested in preventive actions at this point of the disease, which is perceived as a non-disease because they do not feel the *need*. That is, the symptoms, or absence of symptoms, are not related to any phenomenon they understand as a disease[18].

Lack of motivation is a major problem for the lack of treatment adherence on the part of patients with chronic diseases; that is, patients have no motivation to implement treatment-related care or minimize complications related to chronic pathologies, thereby hampering the efficient progress of treatment.

Intrinsic motivation is reflected in the importance patients place on adherence and reinforces the development of self-care skills. These are the treatment goals that should be adopted together with the goals of any pharmacological treatment, resulting in better adherence[19].

The investigation concerning associations among the socio-demographic and clinical variables with ECDAC revealed that, among the three subscales, subscale II, which addresses mental capacity, was the one most influenced by education and visual acuity. Hence, education plays an important role in knowledge acquisition concerning disease prevention and treatment, an aspect that shows the need to adapt DM-related instructions and information provided to seniors with low levels of education. A lack of understanding of such information compromises one's self-care competence. Healthcare professionals should develop strategies respecting both the strengths and limitations of patients, using appropriate language and means that ease the understanding of instructions and health actions[20-22].

Certain items were influenced by visual acuity because visual acuity identified one's reading capacity, knowledge of DM and its complications. These items were also influenced by low educational level, showing the need to standardize or customize educational interventions[10].

Note that the sum of these two variables (education and visual acuity) generated a complex clinical situation that required professionals to implement specific and individualized interventions.

CONCLUSION

ECDAC was a relevant instrument to evaluate DM self-care competencies, guiding actions to prevent future complications. The senior citizens in the study were not classified as self-care competent, which indicated the importance of developing health promotion actions directed to this population seeking to evaluate self-care competencies.

We recommend that researchers, nurses and other healthcare workers use ECDAC, both in the PHC and at other levels of healthcare. The viability of this instrument to assess the self-care competencies of diabetic patients can only be verified with the contributions of researchers from other healthcare settings.

This study showed that the relationship between personal factors and self-care competence for diabetes is significant and should be taken into account in actions and interventions implemented by healthcare workers to promote healthcare from a biopsychosocial approach.

We believe that the importance of assessing DM self-care competence can minimize the manifestations of preventable events and, therefore, improve healthcare delivery and the quality of life of individuals with DM.

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