Knowledge about DM self-care of older adults in primary health care

Conocimiento sobre el autocuidado de la DM de los adultos mayores en la atención primaria de salud

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Abstract

Introduction: Population growth and increased life expectancy have contributed to the increase in the elderly population and the rise in cases of diabetes.
Objective: toassess knowledge about diabetes and associated factors through a cross-sectional study with elderly diabetics in primary health care.
Methods: Diabetes Knowledge Scale and the Pearson correlation coefficient were evaluated.
Results: Of the 202 elderly, 77.7% had insufficient knowledge about the disease, especially for ketonuria and food substitution and did not know the causes and care of hypoglycemia.
Conclusions: The findings reinforce the need for educational actions that include socioeconomic, psychoemotional, and educational aspects in managing diabetes.

Keywords: Diabetes Mellitus; Elderly; Knowledge; attitudes; practice; First aid source: DeCS
DOI Number: 10.14704/nq.2022.20.13.NQ88021 NeuroQuantology 2022; 20(13): 148-155

Resumen

Introducción: El crecimiento demográfico y el aumento de la esperanza de vida han contribuido al aumento de la población anciana y al alza de casos de diabetes.
Objetivo: evaluar el conocimiento sobre la diabetes y los factores asociados a través de un estudio transversal con ancianos diabéticos en la atención primaria de salud
Método: Utilizamos la Escala de Conocimiento de la Diabetes y se evaluó el coeficiente de correlación de Pearson.
Resultados: De los 202 ancianos, 77,7% tenían conocimientos insuficientes sobre la enfermedad, especialmente para cetonuria, sustitución de alimentos y desconocían las causas y cuidados de la hipoglucemia.
Conclusiones: Los hallazgos refuerzan la necesidad de acciones educativas que incluyan aspectos socioeconómicos, psicoemocionales y educativos en el manejo de la diabetes.
Palabras clave: Diabetes Mellitus; Anciano; Conocimiento; actitudes; práctica; Primeros auxilios fuente: DeCS

Introduction

Population growth, improved access to health services and increased life expectancy have contributed to the increase in the elderly population and a more significant number of diabetes cases. As a result, the overall prevalence of the disease in people aged 60-79 years is 18.6%, more than 134.6 million people, accounting for 35% of adult cases, and is expected to reach 252.8 million by 2035[(1)].

In this context, self-care implies the execution of actions directed by and for the individuals to meet their needs and contribute to maintaining life, health and well-being. For example, when living with diabetes, the self-care routine includes using medications and adopting healthy lifestyle habits (balanced diet, regular physical activity, moderate alcohol consumption and smoking cessation) as an essential condition for metabolic control and prevention of chronic disease complications[(2)].

However, in old age, limitations and dependence arise in performing activities of daily living that compromise functional capacity and maintenance of autonomy, making self-care management difficult. However, a systematic review showed that self-care among older adults with diabetes promotes improved lifestyle, functionality and glycemic control through self-efficacy and knowledge about the disease[(3)].

Primary health care is the ideal setting for the development of diabetes self-care by increasing knowledge and attitude change. However, studies assessing the association of knowledge acquisition and self-care readiness with socioeconomic and clinical variables among older adults with diabetes are still scarce in the literature [(1)].

Thus, investigating these factors can reinforce the capacity for self-care and contribute to the better management of diabetes. For this purpose, the objective was to evaluate the knowledge about diabetes, the attitude toward self-care and associated factors in older adultswho attended primary health care.

Method

Design, population and sample

This is a cross-sectional study nested in the population baseline that makes up the area of the city of Ambato.

The formula [z2p (100-p)/d2] was used in the sample calculation, with an alpha error of 5% (z), a prevalence of insufficient knowledge about the diabetes of 50% (p), with a margin of error of 7% (d). The resulting minimum sample size was 196 elderly diabetics. An increase of 10% (x) was made to cover eventual losses, using the formula [100 / (100-x)], making a total of 218 elderly diabetics.

Eligibility Criteria

Participants were randomly selected and stratified according to age bracket every ten years. The draw was performed using a random number table generated by the EPI-INFO 6.04 program (WHO/CDC/Atlanta, GE, USA) until the stipulated sample size was reached.

Persons aged 60 years or older of both sexes registered in the health areas of the region, with a medical diagnosis of diabetes in the clinical history, were selected. The exclusion criteria were institutionalized diabetic older adults (residents of long-stay or hospitalized institutions) or unable to walk, with impaired communication or cognition recorded in the clinical history, presence of chronic complications of diabetes in advanced stages and reduced mobility that restricted access to the health unit.

Procedure

Previously trained field investigators conducted data collection from August 2020 to March 2021. Initially, medical records of all people with diabetes enrolled in each clinic were collected toidentify elderly diabetics.

After identifying the population, the interview was scheduled through telephone contact. Due to the deficient physical structure of the clinic, the community sought a space close to the services to carry out the research activities, emphasizing the comfort and accessibility of the elderly. Therefore, the interview was conducted individually, in a private setting, through a structured instrument made up of thematic blocks that included sociodemographic and clinical variables related to knowledge of diabetes and self-care attitude.

Sociodemographic variables

The variables gender, age, marital status, household scheme (living alone or with someone), schooling and economic level were investigated, but the categories were grouped into A/B, C, D/E for analysis.

Clinical variables
Time of diabetes diagnosis (< 10 years, 10 to 20, ≥ 20 years), presence of comorbidities (arterial hypertension, dyslipidemia), chronic complications of diabetes (retinopathy, nephropathy, and neuropathy), smoking (smoker, former smoker, and never smoked), and consumption of alcoholic beverages (yes/no).

In the anthropometric evaluation, weight (in kilograms) and height (in centimeters) were measured in duplicate. For data consistency, measurements with differences greater than 100g for weight and 5mm for height were repeated. Weight was obtained with individuals barefoot, without head ornaments, dressed in light clothing, in an upright position, with feet together and arms placed alongside the body, with the palm facing the leg.

Body Mass Index (BMI) was calculated according to the Queteletequation[4] and classified according to Lipschitz[5] as underweight, with BMI < 22kg/m²; eutrophic, BMI between 22kg/m² and 27kg/m²; and overweight BMI > 27kg/m².

In evaluating serum glycosylated hemoglobin (HbA1c) concentrations, approximately 10 ml of blood was collected by venous puncture in the cubital fossa area in health care facilities. Recommendations of the American Diabetes Association were adopted, which define good glycemic control for HbA1c values below 7% for healthy elderly.

The data were entered twice in an Excel spreadsheet for Windows® and checked with VALIDATE, a module of the Epi-info Program version 6.04 (WHO/CDC/Atlanta, GE, USA), to verify consistency and validation. The data were then transferred to the Statistical Package for Social Sciences (SPSS) version 26.0 (SPSS Inc., Chicago, IL, USA).

Continuous variables were tested for normal distribution using the Kolmogorov-Smirnov test. Normally distributed data were described by the mean and standard deviation (SD), while non-normal data were described by the median and interquartile range (IQR). In the description of the proportions, the binomial distribution was approximated to the normal distribution by the 95% confidence interval.

Descriptive statistics were used to characterize the sample regarding sociodemographic and clinical variables. Pearson's Chi-square test of independence or Fisher's exact test was used for the association between knowledge of diabetes and sociodemographic and clinical variables.

The Odds Ratio interpreted the results and the respective 95% Confidence Intervals (CI), calculated for each statistically significant variable ($p < 0.05$).
All respondents were previously informed of the objectives of the research, as well as the methods to be adopted. Therefore, this study was approved by the Universidad Regional Autónoma de Los Andes (UNIANDES).

Results
Of the 218 elderly diabetics selected, 16 questionnaires had inconsistent data and only 202 elderly diabetics were included in the analysis. Of these, 73.3% (95% CI 66.6, 79.2) were female, with a median age of 66.0 years (CI 63.0, 72.0), 46.0% (95% CI 39.0, 53.2) were married or in union and 83.7% (95% CI 77.8;88.5) lived with someone. In terms of schooling, they had a median of 5.0 (RIC 2.0; 8.0) years of schooling and in household socioeconomic classification, 53% (95% CI 45.8; 60.0) were included in class C and 29.7% (95% CI 23.5); 36.5) in classes D/E.

Regarding clinical variables, 50.5% (95% CI 43.4, 57.6) of the elderly had a diagnosis of diabetes less than 10 years ago, with a median of 9 years (RIC 4.0;15.0). The main self-reported comorbidities were: 47.0% (95% CI 39.9, 54.2) dyslipidemia and 79.2% (95% CI 72.9, 84.6) chronic complications, 64.9% (95% CI 57.8, 71.4) retinopathy, 34.7% (95% CI 28.1, 41.7) neuropathy and 6.9% (95% CI 3.84, 11.4) nephropathy. Tobacco use was found in 7.4% (95% CI 4.2;11.9) of the elderly interviewed and alcohol use in 15.8% (95% CI 11.1;21.6). Regarding metabolic control, 51.0% (95% CI 43.9; 58.1) were overweight, mean abdominal circumference 100.1 cm (± 11.7; SD) and 76.7% (95% CI 73.3; 84.2) had adequate glycemic control, with HbA1c levels below 7%. .

The overall knowledge assessment showed that 77.7% (95% CI 71.4, 83.3) of elderly diabetics had insufficient knowledge about their disease and treatment, with a median of 5.5 points (RIC

eISSN1303-5150

4.0;7.5). Of the 15 items of the DKN-A questionnaire, those with the highest proportion of correct answers were those related to the amount of glucose in the blood in the uncontrolled state of the disease and the normal value of capillary glycemia.

Table 1: Potential factors associated with insufficient knowledge of diabetes among elderly diabetics in the health area.

Variable	Insufficientknowledge (lessthan 8)			
	Sample (%)	n	%	P* value
Genre				
Male	54 (26,7)	42	77.8	0.991
Female	148 (73,3)	115	77.7	
Yearsofage				
60-69	132 (65,3)	95		0.007
Over 70	70 (34,7)	62	88.6	
Marital status				
Married/commonlawmarriage	93 (46,0)	74	79.6	0.423
single/divorced	44 (21,8)	31	70.5	
widower	65 (32,2)	52	80.0	
Householdschematic				
Living alone	33 (16,3)	20	60.6	0.010
Living withsomeone	169 (83,7)	137	81.1	
Schooling (years)				
Under 8	162 (80,2)	140	86.4	Lessthan 0.001
Greaterthan 8	40 (19,8)	17	42.5	
Economyclass				
B	35 (17,3)	21	60.0	0.003
C	107 (53,0)	82	76.6	
D and E	60 (29,7)	54	90.0	
Time to diagnosis of DM				
Lessthan 10	102 (50.5)	80	78.4	0.283
10-20	60 (29,7)	43	71.7	
20 and over	40 (19.8)	34	85.0	
Complicationsof DM				
Yes	160 (79,2)	127	79.4	0.271
No	42 (20,8)	30	71.4	
Tobacco use				
yes	15 (7.4)	127	79.4	0.529**

*e*ISSN1303-5150

no	42 (20,8)	30	71.4	
BMI				
Notoverweight	99 (49.0)	78	78.8	0.721
Excessweight***.	103 (51.0)	79	76.7	
Glycosylatedhemoglobin				
More than 7	155 (78,7)	117	75.5	0.158
Lessthan 7	42 (21,3)	36	85.7	
Self-care attitude				
Positive	173 (85,6)	144	83,2	Lessthan 0.001
Negative	29 (14,4)	13	44,8	

Source: statisticalanalysis,p ≤ 0,05
*Pearson's chi-square test p-value for heterogeneity of proportions
**Fisher's exact test
***IMC greater than 27 kg/m2

Discussion

Using validated instruments makes it possible to establish a common language among health professionals and those in related areas. It is a fundamental tool for evaluating responses to treatments, comparing data over time, and understanding and studying the problems observed. The choice of the DKN-A and ATT-19 instruments is justified by allowing the level of knowledge about diabetes, understanding the degree of acceptance of the disease, and establishing reorientations or confirming the effectiveness of the actions of health professionals aimed at people with diabetes[3,6].

Thus, it was observed that insufficient knowledge was the most prevalent among the elderly interviewed. Understanding the disease is fundamental for developing diabetes self-care management skills[1].

In this casuistry, the results are even more worrisome, as most respondents are unaware of the management of hypoglycemia and do not know how to identify the causes of its occurrence. Furthermore, older adults with diabetes are at increased risk for hypoglycemia due to impaired renal function, altered metabolism of oral hypoglycemic agents and insulin, and cognitive deficits compromise self-care management. In addition, studies have shown that hypoglycemia is a risk factor for cognitive impairment in this population. Therefore, glycemic goals should be individualized and there is a need to promote greater knowledge about hypoglycemia and its treatment and prevention[7,8].

Age between 60 and 69 years and living alone were protective factors for insufficient knowledge about diabetes. However, a systematic review found that age is a factor that impedes the acquisition of competencies related to self-care and its management. A study conducted in China with 108 older adults with diabetes showed consistent results demonstrating that age was negatively associated with diabetes knowledge, i.e., the younger the age of the older adult, the higher the knowledge about the disease[2].

The growth of single-person households in all age groups is a worldwide reality. The fact that the elderly live alone may motivatepursuing diabetes knowledge to increase autonomy, independence, and functionality maintenance[9]. While the majority of the sample is comprised of an older adult population under the age of 69, declining cognitive and motor capacity and an increased need for diabetes self-care management support are noted with age. Thus, age is an indicator that should be carefully analyzed in the perception and acceptance of the home scheme once longevity imposes increasing care demands, bringing consequences for the elderly, the family and the community, including also the

professionals[10].

Schooling was directly related to insufficient knowledge about diabetes. It is recognized that low schooling is common among people attending public health services and in the elderly population, this is even more prevalent and may reflect the difficulty of access to education in times past. Therefore, awareness of health professionals about the quality and clarity of the guidelines given about the disease and treatment is crucial[7].

Studies in this area indicate that a high educational level is often a protective factor for diabetes and may be directly related to the possibility of access to and use health information and services. On the other hand, the low educational level can make it difficult to understand the disease and treatment and is a determining variable for glycemic control[2, 3,11].

The level of understanding of medical health information, referred to as functional health literacy, is directly related to diabetes knowledge and self-efficacy, especially among older adults[9].

Another longitudinal study of 751 older adults with diabetes in primary care found that literacy declined with age and a smaller decline was observed in those with higher levels of education [9].

Thus, it can be affirmed that advanced age and low educational level are predictors of inadequate functional health literacy and worse glycemic control[10]. However, it is necessary to consider that knowledge does not always lead to a change of attitude in people with type 2 diabetes[12].

Thus, in planning health actions, professionals should encourage autonomy and consider psychoemotional factors, such as expressing feelings for better identification and overcoming the difficulties imposed by diabetes treatment in daily life [13].

A negative attitude towards self-care was present in most of the elderly with diabetes interviewed[14]. A similar result was found in other studies conducted in primary health care in southeastern Brazil[15]. In general, unlike knowledge, the attitude towards self-care in diabetes decreases with the time of diagnosis. Being a chronic disease, diabetes complications arise over the years and the time of diagnosis predisposes to low motivation for self-care management[2].

There is also a mixture of mixed feelings, from sadness, fear, guilt, and indignation, that must be overcome to reach the stage of acceptance of the disease[8].

Being male, living alone and having some diabetic complications were protective factors for the negative attitude towards self-care. The individual's attitude towards life and the possibility of adapting to adversities can influence coping with the disease and treatment[7].

A study conducted in France with 1,092 individuals with type 2 diabetes to identify the attitude towards the disease found that women present feelings of indignation, dissatisfaction with the disease, low motivation and difficulty in self-care. On the other hand, a man takes responsibility for his disease, does not consider it a burden and copes well with the emotional and social aspects[12].

Thus, it can be explained, from a gender perspective, that males in this series have a positive attitude towards diabetes by inferring that males, historically considered providers of the household, are better adapted to adversity and, therefore, with a positive attitude towards themselves. -care compared to females who exhibit a more passive stance[2].

Living alone in old age is an achievement and, in this study, was related to a positive attitude to self-care in diabetes[3].

Some authors state that individuals with a positive psychological and emotional adjustment to diabetes seek to maintain their preserved functionality that allows them to perform their activities of daily living autonomously and generally do not require family assistance. On the other hand, the presence of comorbidities and chronic complications of the disease may contribute to the disabilities and survival of the elderly with diabetes[9].

Although most respondents had less than 10 years of diabetes diagnosis in this study, the

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presence of comorbidities and complications is already identified. For example, a study conducted in primary health care in southeastern Brazil found a direct association between the duration of diabetes and complications[7, 10,16].

The early onset of diabetes complications may be related to underdiagnosis of the disease or less intensive treatment received throughout life. A study conducted with 219 people with type 2 diabetes attended in PHC units in southern Brazil also found a similar result by identifying hypertension, dyslipidemia, visual disturbances and overweight in the population studied[15]. Among older adults with diabetes, special attention should be paid to complications that significantly compromise functional status, such as vision and lower limbs, which negatively impact self-care management and quality of life. Thus, the presence of diabetes complications that may lead to dependence on performing activities of daily living and generate more suffering may be an explanatory factor for a positive attitude towards self-care found among respondents[17].

In terms of knowledge about the disease and treatment, elderly diabetics with low schooling are thirteen times more likely to have a negative attitude toward self-care when compared to those with high schooling. A similar result was also found in a study conducted with Argentines with type 2 diabetes by identifying that a low educational level leads to the evaluation of the health situation as irrelevant and a passive attitude towards self-care compared to those with a high educational level who have more information to evaluate the situation and actively cope with the difficulties for metabolic control[14].

Conclusions

The findings of this study are relevant for public health since they point to the need to plan interdisciplinary educational actions that consider not only the cognitive aspects related to diabetes but also the psychoemotional aspects that influence self-care. In this perspective, it is essential to consider the socioeconomic and educational characteristics of the elderly with diabetes seen in primary health care to improve glycemic control interventions.

References

1. Malta DC, Bernal RTI, Sá ACMGN de, Silva TMR da, Iser BPM, Duncan BB, et al. Diabetes autorreferido e fatores associadosnapopulação adulta brasileira: Pesquisa Nacional de Saúde, 2019. CiêncSaúdeColetiva [Internet]. 17 de junio de 2022 [citado 2 de agosto de 2022];27:2643-53. Disponible en: https://www.scielosp.org/article/csc/2022.v27n7/2643-2653/pt/
2. Lira JAC, Nogueira LT, Oliveira BMA de, Soares D dos R, Santos AMR dos, Araújo TME de. Fatores associadosao risco de pé diabético em pessoascom diabetes mellitus naAtençãoPrimária. Rev EscEnferm USP [Internet]. 26 de julio de 2021 [citado 2 de agosto de 2022];55. Disponible en: http://www.scielo.br/j/reeusp/a/KQSrsFPLqRXky6nq93ssJgb/abstract/?lang=pt
3. Borba AK de OT, Arruda IKG, Marques AP de O, Leal MCC, Diniz A da S. Conhecimento sobre o diabetes e atitude para o autocuidado de idososnaatençãoprimária à saúde. CiêncSaúdeColetiva [Internet]. enero de 2019 [citado 2 de agosto de 2022];24:125-36. Disponible en: http://www.scielo.br/j/csc/a/P8fcyhWrNmBgHgBgmPMxtjP/abstract/?lang=pt
4. Garrow JS, Webster J. Quetelet's index (W/H2) as a measure of fatness. Int J Obes. 1 de enero de 1985;9(2):147-53.
5. Lipschitz DA. SCREENING FOR NUTRITIONAL STATUS IN THE ELDERLY. Prim Care Clin Off Pract [Internet]. 1 de marzo de 1994 [citado 2 de agosto de 2022];21(1):55-67. Disponible en: https://www.sciencedirect.com/science/article/pii/S0095454321004528
6. Beltrame HN, Cimolin LC. Avaliação da educação em autocuidado do Diabetes Mellitus tipo 2 através do escore DKN-A (Diabetes KnowledgeQuestionnaire) em umaunidadeambulatorial no sul catarinense. 22 de noviembre de 2019 [citado 2 de agosto de 2022]; Disponible en: http://repositorio.unesc.net/handle/1/7227
7. Dagogo-Jack S. Preventing diabetes-related morbidity and mortality in the primary care setting. J Natl Med Assoc. julio de 2002;94(7):549-60.
8. Lamar M, Wilson RS, Yu L, James BD, Stewart CC, Bennett DA, et al. Associations of literacy with diabetes indicators in older adults. J Epidemiol Community Health [Internet]. 1 de marzo de 2019 [citado 2 de agosto de 2022];73(3):250-5. Disponible en:

https://jech.bmj.com/content/73/3/250

9. Sánchez-Chávez NP, Reyes-Gómez U, Reyes-Hernández KL, Matos-Alviso LJ, Reyes-Hernández MU, Cuevas-López LL, et al. Impacto de un programa de educación para la salud promoviendo conductas de autocuidado en pacientes diabéticos tipo 2 en el estado de Oaxaca. Salud Jalisco [Internet]. 10 de febrero de 2021 [citado 2 de agosto de 2022];7(Esp):24-30. Disponible en: https://www.medigraphic.com/cgi-bin/new/resumenI.cgi?IDARTICULO=98132
10. Abdullah A, Liew SM, Salim H, Ng CJ, Chinna K. Prevalence of limited health literacy among patients with type 2 diabetes mellitus: A systematic review. PLOS ONE [Internet]. 7 de mayo de 2019 [citado 2 de agosto de 2022];14(5):e0216402. Disponible en: https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0216402
11. Borba AK de OT, Arruda IKG, Marques AP de O, Leal MCC, Diniz A da S. Knowledge and attitude about diabetes self-care of older adults in primary health care. CiêncSaúdeColetiva [Internet]. enero de 2019 [citado 2 de agosto de 2022];24:125-36. Disponible en: http://www.scielo.br/j/csc/a/P8fcyhWrNmBgHgBgmPMxtjP/abstract/?lang=en
12. Marciano L, Camerini AL, Schulz PJ. The Role of Health Literacy in Diabetes Knowledge, Self-Care, and Glycemic Control: a Meta-analysis. J Gen InternMed [Internet]. 1 de junio de 2019 [citado 2 de agosto de 2022];34(6):1007-17. Disponible en: https://doi.org/10.1007/s11606-019-04832-y
13. Marques VGP da S, Barreto EB, Júnior CP de S, Lima MWH, Melo ACA de, Santos MP, et al. Qualidade de vida de pacientes com Diabetes mellitus naAtençãoPrimária. Res Soc Dev [Internet]. 1 de mayo de 2021 [citado 2 de agosto de 2022];10(5):e15610514999-e15610514999. Disponible en: https://rsdjournal.org/index.php/rsd/article/view/14999
14. American Diabetes Association. Introduction: Standards of Medical Care in Diabetes—2022. Diabetes Care [Internet]. 16 de diciembre de 2021 [citado 2 de agosto de 2022];45(Supplement_1):S1-2. Disponible en: https://doi.org/10.2337/dc22-Sint
15. SciELO - Brazil - Conhecimento sobre o diabetes e atitude para o autocuidado de idososnaatençãoprimária à saúdeConhecimento sobre o diabetes e atitude para o autocuidado de idososnaatençãoprimária à saúde [Internet]. [citado 2 de agosto de 2022]. Disponible en: https://www.scielo.br/j/csc/a/P8fcyhWrNmBgHgBgmPMxtjP/abstract/?lang=pt
16. Smith B, Magnani JW. New technologies, new disparities: The intersection of electronic health and digital health literacy. Int J Cardiol [Internet]. 1 de octubre de 2019 [citado 2 de agosto de 2022];292:280-2. Disponible en: https://www.sciencedirect.com/science/article/pii/S0167527318369973
17. BailPupko V, Azzollini SC. Diabetes: actitudes, afrontamiento y autocuidado [Internet]. Editorial Académica Española; 2019 [citado 2 de agosto de 2022]. Disponible en: https://ri.conicet.gov.ar/handle/11336/134865