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Original Article

Correlation between sociodemographic and clinical profile and level of knowledge and attitude in elderly diabetic patients

Correlação do perfil sociodemográfico e clínico com o nível de conhecimento e atitude em idosos diabéticos

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Objective: to identify the correlation between the sociodemographic and clinical profiles of elderly people with diabetes and their level of knowledge and attitude toward self-management of health. **Methods:** a cross-sectional study was conducted with 89 elderly individuals with type 2 diabetes mellitus. A sociodemographic questionnaire, clinical data from medical records, and Brazilian versions of the Diabetes Knowledge Scale Questionnaire and the Diabetes Attitudes Questionnaire were used and analyzed using Pearson's coefficient. **Results:** negative correlations were identified for obese elderly individuals (p = 0.038), those who live alone (p = 0.027); smokers (p = 0.003) and non-smokers (p = 0.036); those in regular use of insulin (p = 0.018); and those with kidney disease (p = 0.033). **Conclusion:** the greater the knowledge, the greater the attitude in elderly women; in all strata referring to family income; residents in urban areas; with a complete high school education; non-obese; and affected by retinopathy. **Contributions to practice:** it is recommended that nursing actions be strengthened to encompass not only the biological sphere but also the psychosocial sphere and provide attitudinal support for self-management of health.
Descriptors: Aged; Diabetes Mellitus; Health Knowledge, Attitudes, Practice; Nursing.

RESUMO
Objetivo: identificar a correlação entre o perfil sociodemográfico e clínico de idosos com diabetes e o nível de conhecimento e atitude para autogestão da saúde. **Métodos:** estudo transversal, realizado com 89 idosos com diabetes *mellitus* tipo 2. Utilizaram-se questionário sociodemográfico, dados clínicos de prontuários e versões brasileiras do *Diabetes Knowledge Scale Questionnaire* e do *Diabetes Attitudes Questionnaire*, analisados pelo coeficiente de Pearson. **Resultados:** identificaram-se correlações negativas para idosos obesos (p = 0,038), que residem sozinhos (p = 0,027); tabagistas (p = 0,003) e não tabagistas (p = 0,036); em uso regular de insulina (p = 0,018); e com doença renal (p = 0,033). **Conclusão:** quanto maior o conhecimento, maior a atitude em idosos do sexo feminino; de todos os estratos referentes a renda familiar; residentes em área urbana; com ensino médio completo; não obesos; e acometidos por retinopatia. **Contribuições para a prática:** recomenda-se o fortalecimento das ações de enfermagem para além da esfera biológica, incluindo a esfera psicossocial e o apoio atitudinal de autogestão da saúde.
Descritores: Idoso; Diabetes Mellitus; Conhecimentos, Atitudes e Prática em Saúde; Enfermagem.

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Introduction

In 2024, the number of adults living with diabetes worldwide reached 588.7 million, with the prospect of reaching 825.5 million in 2050. In that year, the prevalence of diabetes mellitus (DM) in Brazil was 10.5% of the population, while the proportion of undiagnosed cases was 31.9%, and the prevalence among people aged 20 to 79 was 10.7%[1]. It is important to note that, in 2022, the prevalence rates of DM were 19.9% for people aged 65 to 74 and 21.1% for those over 75[2-3].

The prevalence of DM, as well as the complications and deaths resulting from the disease, is influenced by the interaction between socioeconomic, environmental, genetic, and behavioral factors, together with the individual's knowledge and attitudes toward the disease[4-6]. Individuals with health self-management skills, including knowledge and attitudes related to monitoring and decision-making, experience fewer complications and a better quality of life[3].

Nursing care is essential to encourage individuals with DM to adopt the seven crucial behaviors for effective diabetes self-management, which include: healthy eating habits, regular physical activity, regular monitoring of blood glucose levels, adherence to prescribed medication, solving specific problems related to the disease, healthy coping with adversity, and reduction of associated risk factors[5]. In this sense, nurses should identify and assess the impact of these aspects on individuals' behavior related to diabetes self-management, employing appropriate tools during nursing consultations to mitigate or enhance these influences[6].

There is a relationship between socioeconomic factors, knowledge, and attitudes, and the quality of DM self-management[5-8]. However, there is a lack of research linking knowledge and attitude scores to sociodemographic and clinical factors[9-12]. It should be noted, therefore, that this study is pioneering in its approach to the subject.

In this context, the objective of this study was to identify the correlation between the sociodemographic and clinical profiles of elderly people with diabetes and their level of knowledge and attitude toward self-management of health.

Methods

Study design, period, and location

This is a cross-sectional observational study, presented in accordance with the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines. It was conducted between October 2022 and February 2023.

It occurred at the DM Referral and Treatment Service, also known as the DM Treatment Reference Center (Centro de Referência para o Tratamento de DM). It is a secondary healthcare unit in the municipality of Campos dos Goytacazes, Rio de Janeiro, Brazil. The center provides care for individuals with skin lesions, DM, and vascular diseases. The health team consists of social workers, nurses, doctors, nutritionists, psychologists, and nursing technicians.

Population and sample

There are 600 patients registered at the Reference Center for the Treatment of DM, most of whom are elderly. In December 2022, this number was 432 people, of whom 337 (78%) were more than 65 years old.

The inclusion criteria were: individuals aged ≥ 60 years, with type 2 diabetes mellitus (T2DM), undergoing treatment with oral antidiabetic drugs and / or insulin (monotherapy and /or combinations), and consulting a nurse at least once a week. The exclusion criteria were: illiteracy, cognitive impairment, and incomplete forms.

The reference population consisted of 337 eligible patients with type 2 diabetes mellitus (T2DM) who were being treated during the research period. The final sample size of 89 was deemed operationally feasible, considering that the nursing team typically treats an average of 30 to 50 patients per day. This contingent represents the total number of patients who qualified for the study and could be included in

the defined period, constituting a realistic and manageable number for a team that deals with a considerable daily flow of patients. This number corresponds to covering approximately 26.4% of the target population, resulting in a statistical power of 82%, as calculated using G*Power software.

It is acknowledged that this sampling method may introduce selection bias due to the finite population's coverage percentage. Nevertheless, logistical justification ensures the relevance of the data to the local context, and a sufficiently large sample size reduces the potential for bias.

Variables

The socioeconomic variables evaluated were gender, family income, area of the city where the patient resides, whether they live alone or with others, and level of education. The clinical variables were time since diagnosis, type of treatment, medication regimen, obesity, smoking, previous stroke(CVA), previous acute myocardial infarction (AMI), previous amputation, presence of venous ulcer or diabetic foot, occurrence of retinopathy, and occurrence of kidney disease.

The variables related to older adults' knowledge and attitudes toward DM are included in the Diabetes Knowledge Scale Questionnaire (DKN-A) and Diabetes Attitudes Questionnaire (ATT-19)[13-14].

Data collection

Clinical data were collected by reading medical records; sociodemographic data were collected by applying a questionnaire; and data on the elderly participants' knowledge and attitudes toward DM were obtained by using the Brazilian versions of the DKN-A[13] and ATT-19[14] questionnaires, respectively.

The DKN-A is a self-administered questionnaire with 15 multiple-choice items about different aspects related to general knowledge of DM. It has five broad categories: Basic physiology, including the action of insulin; Hypoglycemia; Food groups and their substitutes; Management of DM in the event of another disease; and General principles of disease care. The measurement scale ranges from 0 to 15, and each item is scored 1 for a correct answer and 0 for an incorrect answer. Items 1 to 12 require a single correct answer. For items 13 to 15, only some answers are correct; to obtain a score of 1 for each item, the respondent must mark all the proper alternatives. A score higher than 8 indicates knowledge about DM[15].

ATT-19 refers to a self-administered instrument for measuring psychological adjustment to DM, developed in response to the need to assess psychological and emotional aspects related to the disease. It consists of 19 items, which include six factors: stress associated with DM, responsiveness to treatment, confidence in treatment, personal efficacy, perception of health, and social acceptance. Questions 11, 15, and 18 begin with a reverse score. The primary application of the attitude scale is in assessing educational interventions. Each response is measured on a five-point Likert scale, ranging from "Strongly disagree" (1 point) to "Strongly agree" (5 points), with a total ranging from 19 to 95 points. A score higher than 70 points indicates a positive attitude toward the disease[14-15].

The fieldwork, participant recruitment, and data collection took place between October 10, 2022, and February 23, 2023. Potential participants were scheduled for a nursing consultation during the data collection time frame. After the consultation, the elderly person received information about the research and its method and was invited to participate in the study.

Those who agreed to participate were directed to a room to discuss their experiences with the researchers. First, the volunteers were evaluated according to the exclusion criteria. Each elderly person in the final sample took an average of 40 minutes to complete the questionnaires. The instruments were self-administered. Participants were left alone in the room to answer the questions and were instructed to hand in the three instruments to the researchers.

Clinical data were obtained by reading the medical records of study participants, which constituted the final stage of data collection.

Data analysis

The data were entered into Excel and then exported to SPSS, version 20.0, where descriptive analyses of the variables were performed.

Continuous variables (including knowledge and attitude score variables, as well as continuous sociodemographic and clinical variables) were initially evaluated for their distribution. Data normality was verified using the Shapiro-Wilk test. Descriptive analyses of continuously distributed variables were presented as mean and standard deviation.

Considering the continuous nature and assumed normal distribution of the score variables, Pearson's correlation coefficient was used to analyze the correlation between the knowledge and attitude score variables and the sociodemographic and clinical variables. The analyses were performed using Minitab® software, version 17.1.0. The confidence interval applied was 5% significance.

Ethical aspects

All participants were informed about the study and signed two copies of the Free and Informed Consent Form. The research was approved by the Human Research Ethics Committee of the Faculty of Medicine of the Fluminense Federal University under Ethical Review Certificate No. 59423822.5.0000.5583 and Opinion No. 5,691,845/2022.

Results

The sociodemographic questionnaire revealed that most of the elderly participants were female, had a family income between one and two minimum wages, lived in rural areas with other family members, and had completed elementary school. Regarding clinical variables, most had been diagnosed with DM for between one and five years, were not obese or smokers, used insulin regularly, and had a previous history of stroke, AMI, amputation, venous ulcer, or diabetic foot, retinopathy, and kidney disease (Table 1).

Table 1 – Sociodemographic and clinical variables of elderly individuals with DM2 according to means and standard errors of the Diabetes Knowledge Scale Questionnaire and Diabetes Attitudes Questionnaire (n=89). Campos dos Goytacazes, RJ, Brazil, 2022-2023

Variables	n (%)	Averages ± Standard error	
		DKN-A*	ATT-19†
Gender			
Female	52 (58.4)	6.06 ± 0.11	60.17 ± 0.71
Male	35 (39.3)	7.97 ± 0.41	55.09 ± 0.84
Not specified	2 (0.2)	6.00 ± 0.00	66.00 ± 0.00
Family income (minimum wages)			
< 1	33 (37.0)	8.06 ± 0.43	55.09 ± 0.90
1 to 2	49 (55.0)	6.02 ± 0.11	60.78 ± 0.74
2 to 3	7 (0.7)	6.43 ± 0.30	56.14 ± 0.70
Time of diagnosis (year)			
< 1	19 (21.3)	9.58 ± 0.47	56.00 ± 1.40
1 to 5	45 (50.5)	6.09 ± 0.10	60.93 ± 0.74
> 5	25 (28.0)	6.00 ± 0.21	55.32 ± 0.86
Area of residence			
Urban	14 (15.7)	6.07 ± 0.13	59.29 ± 1.08
Rural	75 (82.2)	6.95 ± 0.23	58.12 ± 0.69
Education			
High school graduate	19 (21.3)	6.11 ± 0.15	60.11 ± 1.19
Elementary school graduate	70 (78.6)	7.00 ± 0.25	57.81 ± 0.69
Obesity			
No	73 (82.0)	6.10 ± 0.11	58.70 ± 0.64
Yes	16 (11.9)	10.06 ± 0.43	56.50 ± 1.59
Lives alone			
Yes	74 (83.1)	7.86 ± 0.38	58.22 ± 0.86
No	15 (16.8)	6.06 ± 0.14	58.37 ± 0.84
Smoking			
No	77 (86.5)	6.40 ± 0.16	58.35 ± 0.62
Yes	12 (13.4)	9.42 ± 0.71	58.00 ± 2.09
Stroke			
No	57 (64.0)	6.21 ± 0.15	59.93 ± 0.72
Yes	32 (35.9)	7.88 ± 0.43	55.41 ± 0.88
Regular use of insulin			
No	30 (33.7)	6.13 ± 0.10	59.43 ± 0.87
Yes	59 (66.2)	7.15 ± 0.29	57.73 ± 0.79
Amputation			
No	72 (80.8)	6.31 ± 0.14	58.79 ± 0.63
Yes	17 (19.1)	8.94 ± 0.63	56.24 ± 1.65
Venous ulcer or diabetic foot			
No	65 (73.0)	7.03 ± 0.26	57.75 ± 0.73
Yes	24 (26.9)	6.21 ± 0.12	59.79 ± 1.02
Acute myocardial infarction			
No	86 (96.6)	6.71 ± 0.20	58.35 ± 0.62
Yes	3 (0.3)	9.67 ± 0.33	57.00 ± 2.31
Retinopathy			
No	75 (84.2)	6.95 ± 0.23	58.39 ± 0.67
Yes	14 (15.7)	6.07 ± 0.22	57.86 ± 1.41
Kidney disease			
No	77 (86.5)	6.99 ± 0.22	57.57 ± 0.59
Yes	12 (13.4)	5.67 ± 0.28	63.00 ± 2.00

*DKN-A: Diabetes Knowledge Scale Questionnaire; †ATT-19: Diabetes Attitudes Questionnaire

Positive correlations—reflected in the reasoning that the higher the knowledge score, the higher the attitude score—were observed in: females; all family income strata; urban residents; older adults with a high school education; non-obese older adults; and older adults with retinopathy.

Negative correlations—translated by the reasoning that the higher the knowledge score, the lower the attitude score—were observed in: elderly individuals with complete high school education; obese individuals; elderly individuals living alone; smokers and non-smokers; elderly individuals who regularly use insulin; elderly individuals not affected by retinopathy; and elderly individuals with kidney disease (Table 2).

Table 2 – Pearson correlations between knowledge and attitude scores and sociodemographic variables of older adults with T2DM (n = 89). Campos dos Goytacazes, RJ, Brazil, 2022–2023

Variable	n (%)	Correlation (r)	t*	p†
Gender				
Female	52 (58.4)	+0.3063	1.8483	0.036
Male	35 (39.3)	-0.2296	-1.6682	0.050
Not specified	2 (0.2)	0.0000	0.0000	0.500
Family income (minimum wages)				
Not reported	2 (0.2)	0.0000	0.0000	0.500
< 1	33 (37.0)	+0.3097	1.8133	0.039
1	49 (55.0)	+0.2277	-1.6032	0.027
1 to 2	7 (0.7)	+0.2922	0.6831	0.162
> 2	19(21.34)	+0.2143		0.039
Education level				
High school graduate	19 (21.3)	+0.2143	-0.9047	0.039
Elementary school graduate	70 (78.6)	-0.1193	-0.9911	0.010
Area of residence				
Urban	14 (15.7)	+0.4120	-1.5662	0.021
Rural	75 (82.2)	-0.1343	-1.1578	0.123
Lives alone				
No	74 (83.1)	-0.1816	-1.0925	0.141
Yes	15 (16.8)	-0.1865	-1.3426	0.027
Time since diagnosis (years)				
< 1	19 (21.3)	+0.2291	0.9706	0.172
1 to 5	45 (50.5)	-0.1930	-1.2897	0.102
> 5	25 (28.0)	-0.1587	-0.7708	0.224
Obesity				
No	73 (82.0)	+0.1794	-1.5362	0.042
Yes	16 (11.9)	-0.2272	0.8731	0.038
Tobacco use				
No	77 (86.5)	-0.3013	-2.7368	0.003
Yes	12 (13.4)	-0.2292	0.7447	0.036
Stroke				
No	57 (64.0)	-0.1860	-1.4039	0.083
Yes	32 (35.9)	+0.2044	1.1438	0.130
Uses insulin regularly				
No	30 (33.7)	-0.2486	-1.3583	0.092
Yes	59 (66.2)	+0.1124	-0.8539	0.018
Amputation				
No	72 (80.8)	-0.1550	-1.3129	0.094
Yes	17 (19.1)	+0.0819	0.3182	0.377
Venous ulcer or diabetic foot				
No	65 (73.0)	-0.1120	-0.8948	0.185
Yes	24 (26.9)	-0.3260	-1.6176	0.060
Acute myocardial infarction				
No	86 (96.6)	-0.1493	-1.3841	0.083
Yes	3 (0.3)	+0.8660	1.7321	0.166
Retinopathy				
No	75 (84.2)	-0.2087	-1.8233	0.034
Yes	14 (15.7)	+0.5465	2.2605	0.021
Kidney disease				
No	77 (86.5)	-0.0338	-0.2931	0.384
Yes	12 (13.4)	-0.463	-2.0627	0.033

*Student's t-test; †Probability of significance

(the Table 2 continue...)

There was no significant correlation between DKN-A and ATT-19 scores when crossing variables with strata referring to: male gender; time of diagnosis; living in a rural area; living with others; previous history of stroke; not using insulin regularly; having undergone amputation or not; having venous ulcer or diabetic foot or not; having a prior history of AMI or not; and not having kidney disease (Table 2). Figure 1 shows the dispersion between knowledge and attitude scores.

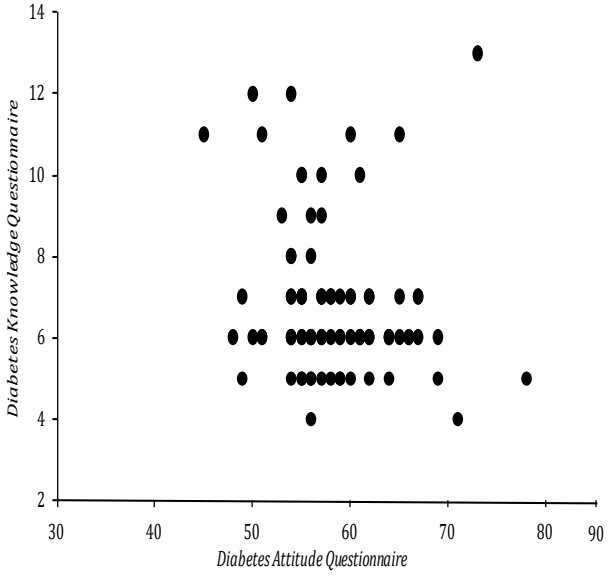

Figure 1 – Dispersion between knowledge and attitude scores of older adults with DM2. Campos dos Goytacazes, RJ, Brazil, 2022–2023

The dispersion between the scores on the DKN-A and ATT-19 shows that there is no direct or inverse relationship between the knowledge and attitude variables.

Discussion

This study highlights the dispersion of knowledge and attitude scores among participants, with a higher concentration in intermediate values, indicating relative homogeneity within the group and suggesting the existence of subgroups with different levels of understanding about diabetes and the application of self-care guidelines. This variation may reflect differences in access to health information, education, and previous care experience.

The sociodemographic profile reproduces trends observed in women, being more frequent among elderly diabetics. These characteristics are associated with longer life expectancy and a more constant presence of women in Primary Health Care services[16-18].

Regarding place of residence, our findings corroborate the higher proportion of older adults living in rural areas[19]; however, they contrast with the general trend of urbanization, where most of the population, including older adults, lives in urban areas[16-17].

Most participants had comorbidities[9], which was confirmed by our results. This presence among older adults with type 2 diabetes mellitus (T2DM) confirms the importance of integrated, patient-centered care aimed at preventing functional decline and promoting self-care. Such an approach contributes to improving the quality of life and reducing complications associated with aging in individuals with diabetes[16,20].

About education, the data presented are consistent with previous studies that identified an average number of years of schooling between 6.65 (± 5.11) and 7.72 (± 3.69)[16-17]. On the other hand, they differ from an Indian study, in which 52.1% of participants had high school or higher education[21], as well as contrasting with a Brazilian study that found 64% of illiterate individuals and 33% of individuals with incomplete elementary education[18].

Regarding the time of diagnosis, the findings are like those of a study that identified a duration of between one and five years after diagnosis of T2DM[19]. In contrast, longer diagnosis times have been observed, reaching up to 22 years[10,20]. This scenario also requires reinforcement of guidelines due to the chronic nature of the disease, the prolonged period of restrictive measures, and the need to update therapies to maintain adherence to treatment and healthcare.

The prevalence of overweight, obesity, and smoking among older adults with T2DM included in this study was lower than that reported for the same population[8-9,16]. This difference highlights the importance of deepening our understanding of the habits and lifestyles related to the healthcare of elderly people with DM2, as well as considering the higher proportion of participants residing in rural areas in the study sample, which may promote a healthier lifestyle.

Regarding medication use, our results differ from another study that found a prevalence of 50.2% of patients using oral medications, 13.3% using insulin exclusively, and 36.5% using both treatments[9], as well as contrasting with another study where 54.5% of participants were on polypharmacy, using five or more medications[21]. On the other hand, the results show that 68% of participants did not use insulin[16].

This divergence suggests that, in the context of the elderly patients studied, factors such as disease severity, comorbidities, risk profile, or even therapeutic inertia may be influencing the non-use of insulin. This observation allows us to conjecture that the decision-making process regarding whether to introduce this treatment reflects not only patient preferences, but also clinical decisions guided by, or not, updated guidelines, as well as barriers to access or acceptance. The correct individualization of insulin use in the elderly, considering frailty, life expectancy, and the risk of hypoglycemia, is crucial for optimizing results and safety[22].

It is essential to consider the need for blood glucose control in participants as crucial information for recommending insulin use in elderly individuals with type 2 diabetes (T2DM)[22]. Therefore, blood glucose testing and medical history can help nurses, through

nursing consultations, implement health practices related to the need for insulin use and provide guidance on the storage and administration of the medication at home.

Self-care behavior is associated with a group of elderly people in intermediate stages of the disease, indicating a potential for maintaining metabolic control and a lower risk of developing chronic complications[8-9,16].

Health literacy and self-efficacy are associated with self-care behaviors and glycemic control in older adults with type 2 diabetes mellitus (T2DM), underscoring the impact of educational and contextual inequalities on disease management[20]. Thus, the analysis of this dispersion highlights the need for targeted and tailored health education strategies that cater to the sociocultural context of the studied population, aiming to promote greater equity in knowledge and attitudes toward the disease.

The correlations observed between knowledge and attitude indicate that factors such as higher education, higher income, and the absence of obesity are associated with more positive attitudes toward type 2 diabetes mellitus (T2DM). At the same time, adverse conditions, including low educational levels and difficulties in accessing services, may limit engagement in self-care. Recent data indicate that higher levels of health literacy, self-efficacy, and social support are associated with improved self-care behaviors and glycemic control among older adults with type 2 diabetes (T2DM)[23-25].

These findings consolidate evidence that knowledge alone does not guarantee behavioral change, and that it is essential to strengthen motivation and the ability to apply learning in everyday life. Thus, promoting continuous and culturally sensitive educational interventions is crucial for expanding the knowledge, attitudes, and autonomy of older adults with T2DM. In this sense, the nursing team plays a strategic role, especially in primary care, health education, individual follow-up, and the promotion of practices that favor self-care and sustainable glycemic control[20].

The positive correlation between knowledge and attitude, observed in the variables of female gender, higher family income, high school education level, absence of obesity, and presence of retinopathy, corroborates data showing the association between a good level of knowledge and a positive attitude[17]. Furthermore, the results revealed that satisfactory levels of health literacy were associated with adequate knowledge, although not directly linked to the risk of diabetic foot disease[20].

Nurses must assess the socioeconomic and educational conditions of elderly individuals with type 2 diabetes mellitus (T2DM) to provide individualized care and ensure equitable treatment. Such practice is essential because it can improve self-care behaviors for blood glucose control, diet, and physical activity, for example.

The negative correlation between the variables of complete elementary school education, obesity, elderly people living alone, smokers and non-smokers, elderly people who regularly use insulin, elderly people not affected by retinopathy, and elderly people with kidney disease contributes to the evidence of low knowledge and attitude scores[8]. Data indicate that low educational attainment and, sometimes, age are associated with unsatisfactory knowledge about DM, resulting in poor self-care practices and negative attitudes toward the disease and the need to cope with it[11]. It also reveals that women who have complications and worse clinical conditions, such as being overweight or obese, may perceive themselves as being in a situation of threat to their own health and fragility, so that this awareness promotes adherence to self-care behaviors[17].

It should be noted that health education initiatives play a fundamental role in promoting self-management of the disease, encouraging adherence to self-care, and preventing complications arising from poorly controlled DM[10,12,19]. It has been observed that a positive attitude toward DM management is associated with a higher level of knowledge about the disease[21], with the impact of knowledge on attitudes and practices aimed at self-care f or people with diabetes being

evident[23-24]. In addition, low health literacy has been linked to lower use of preventive services, an increased risk of developing chronic diseases, lower adherence to treatment, and worse health outcomes[25-27].

It is worth noting that knowledge and attitudes related to self-care are crucial for the control and well--being of older adults with type 2 diabetes mellitus (T2DM). Nursing interventions should be planned on an individualized basis, considering the sociocultural context, health literacy, and the use of multiple educational strategies to ensure their effectiveness and continuity. Strengthening nursing actions beyond the biological dimension and including attitudinal support for self-management of health is essential to promote the protagonism of the elderly in self-care, as well as to prevent diseases and improve quality of life.

Study limitations

Despite the significant sample size, the main limitation of this study is the recruitment of participants from a single location, which may restrict the generalization of the results; therefore, it is recommended to consider the geographical context when interpreting the findings.

Contributions to practice

This study contributes to the scientific knowledge and the practice of nursing professionals in caring for elderly individuals with type 2 diabetes mellitus (DM2). It demonstrates the need to promote integrated nursing care—encompassing physical, psychosocial, and functional aspects—to improve knowledge and attitudes related to self-management of health for the control and well-being of elderly individuals with diabetes.

Conclusion

The study found that the greater the knowledge, the stronger the attitude among elderly women from all family income strata living in urban areas, who have a level of education equivalent to completing high school, are not obese, and are affected by retinopathy. It also indicated that the greater the knowledge, the lower the attitude of those with a complete elementary school education, obese individuals, those who live alone, smokers and non-smokers, those who regularly use insulin, and those with kidney disease. These findings suggest that this population requires targeted health literacy interventions. Thus, nurses need to pay attention to the correlation between demographic and clinical profiles and adherence to educational practices, considering the sociocultural context and health literacy.

Authors' contributions

Conception and design or analysis and interpretation of data; Drafting of the manuscript or critical revision of intellectual content; Final approval of the version to be published; Responsibility for all aspects of the text, ensuring the accuracy and integrity of any part of the manuscript: **Sales FM, Lopes ROP, Cavalcante SVPM, Machineski GG, Santana RF**.

Data availability

The authors declare that the entire dataset supporting the results of this study has been published in the article itself.

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