

Clinical and epidemic characterization of patient with Diabetes mellitus in a clinic, Centro Habana

Caracterización clínica y epidemiológica de los pacientes con Diabetes mellitus en un consultorio, Centro Habana

Juan Leonardo Pacios Dorado¹ , Miguel Enrique Barroso Fontanals² , Christian José Arencibia Pagés³ , Luis Mayer Revé Viltres⁴ , Carlos Yeison Hernández Rodríguez⁵ , Izvania Yaremi Modoy Valiente⁴ 

¹Universidad de Ciencias Médicas La Habana, Facultad “Calixto García”, La Habana, Cuba.

²Universidad de Ciencias Médicas Santiago de Cuba, Facultad de Medicina No. 2, Santiago de Cuba, Cuba.

³Universidad de Ciencias Médicas de Camagüey, Facultad de Ciencias Médicas, Camagüey, Cuba.

⁴Universidad de Ciencias Médicas Santiago de Cuba, Facultad de Medicina No. 1, Santiago de Cuba, Cuba.

⁵Universidad de Ciencias Médicas La Habana, Facultad “Manuel Fajardo”, La Habana, Cuba.

Cite as:

Pacios Dorado JL, Barroso Fontanals ME, Arencibia Pagés CJ, Revé Viltres LM, Hernández Rodríguez CJ, Modoy Valiente IY. Clinical and epidemic characterization of patient with Diabetes mellitus in a clinic, Centro Habana. SAP Primary Care. 2025; 2:48. <https://doi.org/10.62486/pc202548>

Publication History

Submitted: 20-06-2025

Revised: 17-08-2025

Accepted: 08-10-2025

Published: 09-10-2025

Corresponding Author:

Juan Leonardo Pacios Dorado 

ABSTRACT

Introduction: Diabetes Mellitus represents one of the most critical global health challenges, characterized by its high and increasing prevalence.

Objective: to characterize the clinical and epidemiological variables of patients with diabetes mellitus in a medical office in Centro Habana.

Methods: an observational, descriptive, cross-sectional study conducted at Family Medical Office No. 10 in the municipality of Centro Habana, Havana, Cuba, between January and May 2025. Population: 105 patients with a confirmed diagnosis of Diabetes Mellitus. The variables studied were: age, sex, Diabetes Mellitus classification, associated diseases, chronic complications, and pharmacological treatment. Data were processed using absolute frequencies and percentage relative frequencies for qualitative variables; arithmetic mean and standard deviation for quantitative variables. It was based on a retrospective review of medical records.

Results: the age group of 65 years or older was the most affected (47,62 %), with a mean age of 63.5 years (± 8.2 SD) and a predominance of females (55,24 %). Type 2 Diabetes Mellitus constituted most diagnoses (92,38 %), primarily associated with Arterial Hypertension (74,29 %). Oral pharmacological treatment (Metformin/Glibenclamide) was the most used (59,05 %), and Arterial Hypertension was also identified as the most frequent complication (45,71 %).

Conclusions: the age group of 65 years or older and females showed a higher risk of diabetes mellitus. The type 2 modality was the most prevalent, commonly associated with arterial hypertension, which also constituted the most relevant complication. The predominant therapeutic management consisted of oral hypoglycemic agents.

Keywords: Diabetes Mellitus; Type 1 Diabetes Mellitus; Type 2 Diabetes Mellitus; Pharmacotherapy.

RESUMEN

Introducción: la Diabetes Mellitus representa uno de los desafíos sanitarios más críticos a nivel global, caracterizado por su elevada y creciente prevalencia.

Objetivo: caracterizar variables clínicas y epidemiológicas de los pacientes con diabetes mellitus en un consultorio médico de Centro Habana.

Métodos: estudio observacional, descriptivo y transversal, realizado en el Consultorio Médico de la Familia No. 10 del municipio Centro Habana, La Habana, Cuba, entre enero y mayo de 2025. Universo: 105 pacientes con diagnóstico confirmado de Diabetes Mellitus. Las variables estudiadas fueron: edad, sexo, clasificación de la Diabetes Mellitus, enfermedades asociadas, complicaciones crónicas y tratamiento farmacológico. Los datos se procesaron mediante frecuencias absolutas y relativas porcentuales para variables cualitativas; media aritmética y desviación estándar para variables cuantitativas. Se basó en revisión retrospectiva de historias clínicas.

Resultados: el grupo etario de 65 años o más fue el más afectado (47,62 %), con una edad promedio de 63,5 años ($\pm 8,2$ DE) y predominio del sexo femenino (55,24 %). La Diabetes Mellitus tipo 2 constituyó la mayoría de los diagnósticos (92,38 %), asociándose principalmente a Hipertensión Arterial (74,29 %). El tratamiento farmacológico oral (Metformina/Glibenclamida) fue el más empleado (59,05 %), y la Hipertensión Arterial también se identificó

como la complicación más frecuente (45,71 %).

Conclusiones: el grupo etario de 65 años o más y las mujeres mostraron mayor riesgo de diabetes mellitus. La modalidad tipo 2 fue la de mayor prevalencia, asociándose comúnmente a hipertensión arterial, la cual también constituyó la complicación más relevante. El manejo terapéutico predominante consistió en hipoglucemiantes orales.

Palabras clave: Diabetes Mellitus; Diabetes Mellitus Tipo 1; Diabetes Mellitus Tipo 2; Tratamiento Con Fármacos.

INTRODUCTION

Diabetes mellitus (DM) represents one of the most critical global health challenges and is characterized by its high and growing prevalence, its chronic nature, and its significant burden associated with disabling complications and premature mortality. This disease not only requires sustained medical care but also has a profound socioeconomic impact on health systems and affected communities, with type 2 diabetes mellitus accounting for the overwhelming majority of cases worldwide.⁽¹⁾

Epidemiological projections continue to point to an alarming upward trajectory. The International Diabetes Federation estimates that the number of adults with DM could exceed 700 million by 2045, with a disproportionate impact on middle- and low-income regions, where factors such as nutritional transition, sedentary lifestyles, and population aging act as powerful drivers. Latin America, including Cuba, faces a particularly rapid increase in the incidence and prevalence of this disease.⁽²⁾

In the Cuban national context, DM has become one of the leading causes of morbidity and mortality, consistently ranking among the top ten causes of death. This pattern reflects complex interactions between genetic determinants, lifestyles, and environmental factors. The province of Havana, and specifically the municipality of Centro Habana, has demographic and social characteristics that can influence the presentation and management of the disease, such as high population density, socioeconomic diversity, and challenges in accessing resources.⁽³⁾

Despite the availability of national data, there is a pressing need to generate localized and up-to-date epidemiological evidence at the primary care level. Family doctor and nurse offices are the cornerstone of the Cuban healthcare system and the first point of contact for the surveillance, diagnosis, and follow-up of diabetic patients. An accurate understanding of the specific clinical and epidemiological characteristics of the population served in these settings is essential for optimizing prevention strategies, designing effective interventions, and allocating resources appropriately.⁽⁴⁾

Therefore, the objective of this study was to characterize the clinical and epidemiological variables of patients with diabetes mellitus in a medical office in Central Havana.

METHOD

An observational, descriptive, cross-sectional study was conducted to clinically and epidemiologically characterize patients diagnosed with diabetes mellitus treated at Family Medical Office No. 10 in the municipality of Centro Habana, Havana, Cuba. The sample consisted of all patients over 18 years of age who were diagnosed with diabetes mellitus and who were registered at the clinic during the period of January–May 2025. The study population included patients whose medical history was active and accessible. The sample coincided with the population, as all available patients who met the inclusion criteria were included, for a total of 105 patients; therefore, it was not necessary to perform sampling or calculate sample size.

The diagnosis of diabetes mellitus was considered valid according to the medical history and the following criteria of the American Diabetes Association (ADA): an HbA1c concentration $\geq 6,5$ %, a fasting blood glucose concentration ≥ 126 mg/dL, a plasma glucose concentration ≥ 200 mg/dL 2 hours after an oral glucose tolerance test, or a plasma glucose concentration ≥ 200 mg/dL in the presence of classic symptoms of hyperglycemia. No additional laboratory verification was performed by the researchers, which is a methodological limitation that must be acknowledged.

Patients with a confirmed diagnosis of DM and available medical history were included. In cases where a variable was missing from the medical history, the patient was not excluded from the study; instead, only the missing variable was discarded to avoid selection bias. The variables studied were grouped into three main categories. Age and sex were considered sociodemographic. The clinical and epidemiological parameters included the type of diabetes mellitus, duration of the disease, and associated diseases and were operationally defined as follows: high blood pressure based on a previous diagnosis or readings $\geq 140/90$ mmHg in at least two recorded measurements; obesity according to a body mass index ≥ 30 kg/m²; dyslipidemia according to a previous diagnosis or a total cholesterol concentration ≥ 200 mg/dL; chronic kidney disease according to an estimated glomerular filtration rate < 60 mL/min/1,73 m²; and cardiovascular disease according to a diagnosis of ischemic heart disease, heart failure, or cerebrovascular events. Chronic complications were defined as diabetic retinopathy diagnosed by an ophthalmologist, diabetic nephropathy by persistent proteinuria or a reduced glomerular filtration rate, diabetic neuropathy by recorded clinical diagnosis, diabetic foot by the presence of ulcers, amputations, or documented trophic lesions (not including isolated neuropathy without injury), and peripheral arterial disease by recorded clinical diagnosis. Finally, in the therapeutic area, current pharmacological treatments were collected and classified into lifestyle and dietary measures, oral antidiabetic drugs, insulin therapy, or combination therapy.

The data were tabulated and processed using the statistical program SPSS version 28.0. For qualitative variables, absolute frequencies and percentages were calculated, whereas for quantitative variables, the arithmetic mean and standard deviation were calculated. The duration of diabetes mellitus, although not initially reported in the results, was analyzed as a continuous variable

and was incorporated into the final version of the study. In terms of ethical considerations, the study was based on a retrospective review of medical records, ensuring patient confidentiality and anonymity. This research was approved by the institution's Ethics Committee and was conducted in accordance with the principles of autonomy, beneficence, nonmaleficence, and justice.

RESULTS

The group aged 65 years or older accounted for the highest percentage of patients (47,62 %), with a predominance of females (55,24 % women vs. 44,76 % men). The mean age was 63,5 years ($\pm 8,2$ years) (table 1).

Table 1. Distribution of patients by age group and sex						
Age groups	Sex				Total	
	Male		Female			
	No	%	No	%	No	%
25 to 59	15	14,29	10	9,52	25	23,81
60 to 64	12	11,43	18	17,14	30	28,57
65 and over	20	19,05	30	28,57	50	47,62
Total	47	44,76	58	55,24	105	100
*X= 63,5 *SD= 8,2						
*X: Mean age; *SD: Standard deviation						

Almost all patients had type 2 diabetes mellitus (92,38 %), whereas 7,62 % had type 1 diabetes mellitus.

Table 2. Distribution of patients according to type of diabetes mellitus		
Type of diabetes mellitus	No	%
Type 1	8	7,62
Type 2	97	92,38
Total	105	100

The mean duration of diabetes mellitus was 9,8 years ($\pm 5,6$ years), ranging from 1 to 25 years. 41,90 % of patients had been diagnosed more than 10 years ago, 31,43 % had been diagnosed between 5 and 10 years ago, and 26,67 % had been diagnosed less than 5 years ago. When analyzed by sex, women were slightly more predominant in the group with more than 10 years of progression, reflecting a greater chronic burden in this segment.

Table 3. Distribution of patients according to duration of diabetes mellitus						
Duration (years)	Male		Female		Total	
	No	%	No	%	No	%
<5 years	14	13,33	14	13,33	28	26,67
5–10 years	15	14,29	18	17,14	33	31,43
>10 years	18	17,14	26	24,76	44	41,90
Total	47	44,76	58	55,24	105	100
*X= 9,8 years; *SD= 5,6; Range: 1–25 years						

Arterial hypertension was the most prevalent comorbidity (74,29 %), followed by obesity (61,90 %) and hypercholesterolemia (56,19 %).

Table 4. Distribution according to associated diseases		
Associated diseases	No	%
Arterial hypertension	78	74,29
Obesity	65	61,90
Hypercholesterolemia	59	56,19

Diabetic retinopathy was the most common complication (24,76 %), followed by diabetic nephropathy (20,95 %) and diabetic foot (17,14 %). Amputations due to malleolar ulcers were also recorded in 6,67 % of the patients.

Table 5. Distribution according to complications		
Complications	No	%
Diabetic retinopathy	26	24,76
Diabetic nephropathy	22	20,95
Diabetic foot	18	17,14
Diabetic neuropathy	15	14,29

Peripheral arterial disease	12	11,43
Amputations due to malleolar ulcers	7	6,67

The most commonly used therapeutic approach was oral medication, although differences were observed in the regimens used. Monotherapy with metformin accounted for 34,29 % of the cases, combination therapy with metformin and glibenclamide accounted for 24,76 %, and the exclusive use of glibenclamide accounted for 9,52 %. Insulin therapy was administered to 31,43 % of patients, distinguishing between NPH insulin (20,95 %) and regimens combined with fast-acting analogs (10,48 %). Only 9,52 % were under hygienic-dietary measures as their main strategy.

Table 6. Distribution according to treatment

Treatment	No	%
Monotherapy with metformin	36	34,29
Metformin + Glibenclamide	26	24,76
Glibenclamide alone	10	9,52
NPH insulin	22	20,95
Combination insulin (NPH + rapid)	11	10,48
Hygienic-dietetic	10	9,52
Total	105	100

DISCUSSION

The population analyzed was composed mainly of older adults and women, which coincides with the findings of Jacobo Ríos et al.⁽⁵⁾ on population aging and greater female longevity in Cuba. This demographic profile reinforces the need to adapt care strategies to a particularly vulnerable group, where diabetes occurs more frequently and with a prolonged evolution.⁽⁶⁾

The high prevalence of high blood pressure, obesity, and hypercholesterolemia echoes the findings of Díaz et al.⁽⁷⁾ and Araújo et al.⁽⁸⁾, who reported the same cardiovascular risk profile in Hispanic Caribbean populations. Similar findings reported by Lema et al.⁽⁹⁾ in Argentina and Mercado et al.⁽¹⁰⁾ in Mexico suggest a shared epidemiological transition in Latin American urban environments, marked by sedentary lifestyles and nutritional changes that favor the spread of the disease. In contrast, the differences with Brazil in the prevalence of diabetic retinopathy, described by de Azevedo et al.⁽¹¹⁾, could be explained by greater access to ophthalmological services and early detection programs in that country. The findings of Falon et al.⁽¹²⁾ in Colombia revealed higher rates of complications, possibly linked to differences in the organization of health services and the coverage of control programs. Finally, the number of amputations due to diabetic foot was lower than that reported in Haiti by Altamirano et al.⁽¹³⁾, which may be attributed to more effective local protocols for managing this complication. The low percentage of patients who used hygiene and dietary measures as their main strategy is consistent with the findings of Guerrón et al.⁽¹⁴⁾ in Ecuador, who reported deficiencies in therapeutic education and adherence to lifestyle changes.

The absence of HbA1c data in clinical records invalidates any conclusions about the actual effectiveness of the reported treatments, as determining whether patients achieve adequate glycemic control is not possible. The reliance on clinical records introduces a bias that probably underestimates psychological and social complications, such as depression or caregiver burden, aspects described by Sánchez Bárcenas et al.⁽¹⁵⁾ as highly prevalent in patients with type 2 diabetes. The cross-sectional design limits the ability to establish causal relationships and forces the findings to be interpreted as a snapshot in time, without being able to assess disease progression or response to interventions.

The recommendations derived from these results should be specific and applicable to the context of the practice studied. First, a review of pharmacotherapy in people over 65 years of age is suggested, given the high use of glibenclamide, a drug associated with a risk of severe hypoglycemia in the elderly population. A clinical audit would allow its suitability to be assessed and safer alternatives to be considered. Second, an integrated screening protocol is proposed, with quarterly consultations that simultaneously assess diabetic foot, blood pressure, and dietary adherence, taking advantage of the high attendance of patients at the clinic. Finally, strengthening therapeutic education through community workshops and materials adapted to the sociocultural level of the population is recommended, with an emphasis on the importance of diet and exercise as pillars of metabolic control. These actions, derived directly from local findings, would improve the quality of care and reduce the burden of complications in this population.

CONCLUSIONS

Patients over 65 years of age and females are more susceptible to developing diabetes mellitus. Type 2 diabetes was the predominant variant. Hypertension stood out as the most frequent comorbidity, as well as the main complication. Oral pharmacological treatment (hypoglycemic agents) was the most commonly used therapeutic strategy.

CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest.

FUNDING

The authors did not receive funding for this research.

AUTHORSHIP CONTRIBUTIONS

Conceptualization: Juan Leonardo Pacios Dorado, Miguel Enrique Barroso Fontanals, Christian José Arencibia Pagés, Luis Mayer Revé Viltres, Carlos Yeison Hernández Rodríguez, Izvania Yaremi Modoy Valiente.

Data Curation: Juan Leonardo Pacios Dorado, Miguel Enrique Barroso Fontanals, Christian José Arencibia Pagés, Luis Mayer Revé Viltres, Carlos Yeison Hernández Rodríguez, Izvania Yaremi Modoy Valiente.

Formal Analysis: Juan Leonardo Pacios Dorado, Miguel Enrique Barroso Fontanals, Christian José Arencibia Pagés, Luis Mayer Revé Viltres, Carlos Yeison Hernández Rodríguez, Izvania Yaremi Modoy Valiente.

Research: Juan Leonardo Pacios Dorado, Miguel Enrique Barroso Fontanals, Christian José Arencibia Pagés, Luis Mayer Revé Viltres, Carlos Yeison Hernández Rodríguez, Izvania Yaremi Modoy Valiente. **Methodology:** Juan Leonardo Pacios Dorado, Miguel Enrique Barroso Fontanals, Christian José Arencibia Pagés, Luis Mayer Revé Viltres, Carlos Yeison Hernández Rodríguez, Izvania Yaremi Modoy Valiente.

Project Management: Juan Leonardo Pacios Dorado, Miguel Enrique Barroso Fontanals, Christian José Arencibia Pagés, Luis Mayer Revé Viltres, Carlos Yeison Hernández Rodríguez, Izvania Yaremi Modoy Valiente.

Resources: Arnaldo Zambrana Campana, Gaby Elizabeth Bordon Ortiz, Rommer Alex Ortega-Martinez.

Supervision: Juan Leonardo Pacios Dorado, Miguel Enrique Barroso Fontanals, Christian José Arencibia Pagés, Luis Mayer Revé Viltres, Carlos Yeison Hernández Rodríguez, Izvania Yaremi Modoy Valiente. **Validation:** Juan Leonardo Pacios Dorado, Miguel Enrique Barroso Fontanals, Christian José Arencibia Pagés, Luis Mayer Revé Viltres, Carlos Yeison Hernández Rodríguez, Izvania Yaremi Modoy Valiente.

Visualization: Juan Leonardo Pacios Dorado, Miguel Enrique Barroso Fontanals, Christian José Arencibia Pagés, Luis Mayer Revé Viltres, Carlos Yeison Hernández Rodríguez, Izvania Yaremi Modoy Valiente.

Drafting – Original Draft: Juan Leonardo Pacios Dorado, Miguel Enrique Barroso Fontanals, Christian José Arencibia Pagés, Luis Mayer Revé Viltres, Carlos Yeison Hernández Rodríguez, Izvania Yaremi Modoy Valiente.

Writing – proofreading and editing: Juan Leonardo Pacios Dorado, Miguel Enrique Barroso Fontanals, Christian José Arencibia Pagés, Luis Mayer Revé Viltres, Carlos Yeison Hernández Rodríguez, Izvania Yaremi Modoy Valiente.

REFERENCES

1. Yedjou CG, Grigsby J, Mbemi A, Nelson D, Mildort B, Latinwo L, et al. The Management of Diabetes Mellitus Using Medicinal Plants and Vitamins. *IJMS*. 2023;24(10):9085. Disponible en: <https://www.mdpi.com/1422-0067/24/10/9085>
2. Antar SA, Ashour NA, Sharaky M, Khatlab M, Ashour NA, Zaid RT, et al. Diabetes mellitus: Classification, mediators, and complications; A gate to identify potential targets for the development of new effective treatments. *Biomedicine & Pharmacotherapy*. 2023;168:115734. Disponible en: <https://linkinghub.elsevier.com/retrieve/pii/S0753332223015329>
3. Tomic D, Shaw JE, Magliano DJ. The burden and risks of emerging complications of diabetes mellitus. *Nat Rev Endocrinol*. 2022;18(9):525-39. Disponible en: <https://www.nature.com/articles/s41574-022-00690-7>
4. Blonde L, Umpierrez GE, Reddy SS, McGill JB, Berga SL, Bush M, et al. American Association of Clinical Endocrinology Clinical Practice Guideline: Developing a Diabetes Mellitus Comprehensive Care Plan—2022 Update. *Endocrine Practice*. 2022;28(10):923-1049. Disponible en: <https://linkinghub.elsevier.com/retrieve/pii/S1530891X22005766>
5. Jacobo Rios KA, Pérez Flores LM, Téllez Guillen I. Riesgo cardiovascular en el adulto mayor con hipertensión y diabetes en una UMF. *S. F. J. of Health*. 2023;4(1):131-43. Disponible en: <https://ojs.southfloridapublishing.com/ojs/index.php/jhea/article/view/2536>
6. López-Ríos JM, Herrera-Franco E, Taparcúa-Cardona FE, Rodríguez-Corredor LC, Díaz-Valencia PA, Peñaranda-Correa F. Educación dirigida a personas con diabetes: abordajes pedagógicos, teóricos y prácticos en tensión. *Interface (Botucatu)*. 2023;27:e220235. Disponible en: <https://doi.org/10.1590/interface.220235>
7. Diaz Piñera AM, Rodríguez Salvá A, León Sánchez M, Fernández González L, Seuc Jo A, Londoño Agudelo E. Manejo y control de pacientes hipertensos. *Rev Cubana Salud Pública*. 29 de marzo de 2023;49(2). Disponible en: <https://revsaludpublica.sld.cu/index.php/spu/article/view/3385>
8. Araújo Dourado TA, Parente Elvas Coelho Filho MA, Dias Loiola YF, Cardec da Silva W. ANÁLISE COMPARATIVA DA PREVALÊNCIA DE HIPERTENSÃO ARTERIAL SISTÊMICA ENTRE OS ESTADOS DO NORDESTE. *Rev. Contemp..* 2024;4(5):e4525. Disponible en: <https://ojs.revistacontemporanea.com/ojs/index.php/home/article/view/4525>
9. Lema Verdía L, Balboa Barreiroa V, Sánchez Couceiro E, Martín González C, Díaz Pértiga S, Pillado Seoane T et al . Enfermedad arterial periférica en pacientes trasplantados renales. Validez del cuestionario de Edimburgo para el diagnóstico de enfermedad. *Rev. nefrol. dial. traspl. .* 2021 Jun [citado 2025 Jul 06] ; 41(2): 21-30. Disponible en: <https://www.scielo.org.ar/scielo>

php?script=sci_arttext&pid=S2346-85482021000200021&lng=es.

10. Mercado Molina ED, Moreno Terán MV, Barrientos Suárez X, López Nuche M, Rodríguez Weber FL. Utilidad de los chequeos en la detección de hipertensión arterial, diabetes mellitus, hiperlipidemia, en una unidad de chequeo. *Acta Médica Grupo Ángeles*. 2024;22(1):40-3. Disponible en: <https://www.medigraphic.com/cgi-bin/new/resumen.cgi?IDARTICULO=114592>

11. de Azevedo Kleinschmitt B, Duarte Tanuri L, Girotto dos Santos MC, Girotto dos Santos MF, Bachega Germani G. Retinopatía diabética: uma revisão abrangente sobre etiologia, epidemiologia, diagnóstico, tratamento farmacológico e cirúrgico. *Braz. J. Hea. Rev.* 2024;7(2):e68476. Disponible en: <https://ojs.brazilianjournals.com.br/ojs/index.php/BJHR/article/view/68476>

12. Falon Guzmán DJ, Villegas-Suárez JD, Cardona-Cardona J, Cardona-Cardona S, Quintero-López S, Castrillón Spitia JD, et al. Clínica y tratamiento de la diabetes tipo 2 en adultos jóvenes en un hospital colombiano. *Acta Med Col*. 2021;46(3). Disponible en: <http://www.actamedicacolombiana.com/ojs/index.php/actamed/article/view/1902>

13. Altamirano Guerrero OE, Bravo Espinoza MJ, Angulo Borja VH. Determinación de eficacia y seguridad del hidyt gel en pacientes diabéticos con lesiones en miembros inferiores. *Rev Cubana Inv Bioméd*. 2023; 42 (2). Disponible en: <https://revibiomedica.sld.cu/index.php/ibi/article/view/2961>

14. Guerrón Enríquez S, Coral Celin IB, Jeaneth Jiménez M. Factores de riesgo asociados a diabetes gestacional en pacientes del centro de salud “nueva San Rafael”, Esmeraldas. *Rev Cubana Inv Bioméd*. 2024 [citado 6 Jul 2025]; 43. Disponible en: <https://revibiomedica.sld.cu/index.php/ibi/article/view/3671>

15. Sánchez Bárcenas RA, López Hernández D, Brito-Aranda L, García Mantilla BB, Thompson Bonilla MDR, Pavón Delgado E, et al. Factores asociados a la sobrecarga del cuidador en cuidadores primarios de personas adultas mayores con diabetes tipo 2. *Atención Primaria*. 2024;56(10):102948. Disponible en: <https://linkinghub.elsevier.com/retrieve/pii/S0212656724000908>

16. Hernández-Teixidó C, López-Simarro F, Arranz Martínez E, Escobar Lavado FJ, Miravet Jiménez S. Vulnerabilidad y determinantes sociales en diabetes. *Medicina de Familia SEMERGEN*. 2023;49(8):102044. Disponible en: <https://linkinghub.elsevier.com/retrieve/pii/S1138359323001247>