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Factors Associated With The Quality Of Life Of People With Diabetes Mellitus: A Multivariate Analysis In The Context Of Primary Care

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Abstract:
Background: *Diabetes mellitus (DM) is a chronic condition with significant impact on health-related quality of life (HRQoL). Understanding the interplay between clinical, sociodemographic, and psychosocial factors is essential for guiding comprehensive care in Primary Health Care (PHC).*
Materials and Methods: *A cross-sectional, analytical, and quantitative study was conducted with 76 individuals with DM enrolled in the HiperDia program at a PHC unit in São Paulo State, Brazil. Data were collected from March to June 2024 using a sociodemographic and clinical questionnaire and the Diabetes Quality of Life Measure (DQOL-Brasil). Descriptive statistics, bivariate analyses (Pearson's chi-square/Fisher's test), and Multiple Correspondence Analysis (MCA) were applied, adopting a 5% significance level.*
Results: *QoL domain means ranged from 2.67 (Impact) to 2.93 (Diabetes-related concerns), with an overall score of 2.79 (SD=0.14). No statistically significant associations were identified between QoL and clinical or sociodemographic variables, although trends indicated worse QoL among obese, older, and physically inactive participants. MCA revealed a greater discriminative role of sociodemographic variables (sex, age, education, and income) compared with clinical variables.*
Conclusion: *QoL in individuals with DM is not determined exclusively by clinical and metabolic parameters but is strongly influenced by social and psychosocial determinants. These findings reinforce the importance of comprehensive PHC strategies that transcend the biomedical model, integrating health education, physical activity promotion, psychosocial support, and community network strengthening.*

Key Word: *Diabetes mellitus; Quality of life; Primary Health Care; Social determinants of health; Self-care.*

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I. Introduction

Diabetes Mellitus (DM) is a chronic, multifactorial, and progressive condition whose prevalence is increasing worldwide, significantly affecting individuals in developing countries, where socioeconomic inequality and barriers to accessing healthcare services are prevalent. The systemic repercussions of the disease extend beyond the classical micro and macrovascular complications, decisively impacting patients' health-related quality of life (HRQoL), a dimension increasingly recognized as central in evaluating health outcomes and implementing patient-centered care models[1,2].

HRQoL in people with DM should be understood from a comprehensive perspective, involving complex interconnections between clinical markers, behavioral factors, psychosocial contexts, and key social determinants[3]. Studies have shown that, although achieving metabolic control remains a primary goal, the lived experience of the disease, mediated by elements such as self-care burden, social stigma, and family dynamics, can have an equally or even more significant impact on patients' perception of overall well-being[4,5,6].

In the context of Primary Health Care (PHC), recurrent patterns of worsened HRQoL indicators are observed among vulnerable groups, including older adults, women, individuals with low educational and income levels, as well as those with multiple comorbidities or long-term exposure to the disease[7]. However, there is still a lack of robust evidence regarding the relative weight of each determinant and the possible interdependent interactions between clinical and sociodemographic variables across different domains of quality of life.

Beyond traditional indicators, such as time since diagnosis, glycemic control, body mass index (BMI), and presence of complications, growing emphasis has been placed on investigating the role of psychosocial factors and social support resources, which significantly modulate individuals' resilience and their ability to cope with the demands of long-term diabetes management[8,9]. Conversely, gaps remain in our understanding of how cultural contexts, local health policies, and access to health promotion services may mitigate or exacerbate the inequalities observed in HRQoL indicators[10].

In this scenario, cross-sectional, community-based studies play a particularly important role by enabling real-time, comparative analysis of the influence of multiple factors in patients' daily lives, thus providing a basis for more targeted and effective interventions[2,11]. Nevertheless, methodological heterogeneity and the diversity of instruments used to measure quality of life still hinder the development of international consensus and the translation of findings into clinical practice.

Therefore, there remains a pressing need for multivariate investigations that simultaneously consider clinical, sociodemographic, behavioral, and psychosocial factors, in order to clarify the key determinants of quality of life in populations living with DM across various healthcare settings. The present study aims to analyze, using a quantitative and multivariate approach, the factors associated with the quality of life of individuals with diabetes mellitus, contributing to the advancement of knowledge in the field and supporting strategies for comprehensive and equitable care.

II. Methods

This was a cross-sectional and analytical study with a quantitative approach, guided by the *Strengthening the Reporting of Observational Studies in Epidemiology* (STROBE) tool. The study was approved by the Research Ethics Committee of the Faculty of Medicine of Marília (FAMEMA), under approval number 6.615.363. Data collection took place between March and June 2024, at the Centro de Saúde III "Dr. Milton Gondim Pyles", located in the municipality of Platina, in the interior of the state of São Paulo, Brazil.

The study population consisted of individuals diagnosed with diabetes mellitus (DM), registered in the e-SUS/SISAB system and followed up through the HiperDia program of the Family Health Strategy (FHS). Participants were selected through a non-probabilistic, convenience sampling method, based on their availability and willingness to participate. Inclusion criteria were: individuals of both sexes, aged 18 years or older, with a diagnosis of type 1 or type 2 DM for more than six months, and who agreed to participate by signing the Informed Consent Form. Exclusion criteria included: cognitive or intellectual impairments that would hinder the ability to respond to study instruments, relocation to another municipality, illness, or withdrawal from the study.

Data collection was conducted by the principal investigator and two other healthcare professionals affiliated with the FHS team. After participants provided consent by signing the ICF, they answered the data collection questionnaires in a private room, where the interviewer read the questions aloud and marked the responses given by the participant.

Two instruments were used for data collection: the first, developed by the researchers, included sociodemographic variables (age, sex, marital status, race/ethnicity, educational level, income, and family arrangement) and clinical variables (duration of the disease, insulin use, type of treatment, weight, height, BMI, blood pressure, and waist circumference). The second was the *Diabetes Quality of Life Measure Questionnaire* (DQOL-BRASIL), a validated and widely used tool for assessing health-related quality of life in diabetic patients. It consists of 44 multiple-choice items distributed across four domains: satisfaction, impact, social/vocational concern, and diabetes-related concern. Each item is rated on a five-point Likert scale (1–5). Lower scores indicate better outcomes. In the satisfaction domain, a score of 1 corresponds to "very satisfied" and 5 to "not satisfied at all"; in the impact and concern domains, 1 means "never" and 5 means "always"[12].

Initially, a descriptive analysis of the clinical and sociodemographic variables was performed. Quantitative variables were described using means and standard deviations, while categorical variables were presented as absolute and relative frequencies (%). Subsequently, bivariate analysis was conducted between the dependent variable (quality of life) and categorical independent variables using Pearson's chi-square test or Fisher's exact test, as appropriate. For each comparison, odds ratios (OR) and their respective 95% confidence intervals (95% CI) were calculated using the 'odds ratio' function from the epitools package in R software.

To explore the association patterns between the categories of clinical and sociodemographic variables and quality of life, a Multiple Correspondence Analysis (MCA) was performed, projecting individuals into a factorial space defined by the two first eigenvectors with the highest cumulative variance. The outcome variable (quality of life) was treated as a supplementary variable in the MCA, enabling visualization of groupings through confidence ellipses. These ellipses reflect the degree of clustering based on a 0.95 confidence level. The proportion of variance explained by each dimension was considered in the interpretation of results.

The dependent variable, quality of life, was dichotomized based on the median value: ≤ 2.80 (better quality of life) and > 2.80 (worse quality of life). The category "worse quality of life" was adopted as the reference category in the OR analysis.

The independent variables included: Sex (female, male), age (non-elderly: < 65 years; elderly: ≥ 65 years), body mass index (BMI) (normal weight, overweight, obesity), duration of diabetes diagnosis in years (dichotomized by the median into ≤ 20 and > 20), fasting blood glucose, according to the targets set by the Brazilian Diabetes Society (SBD)[13] (≤ 100 mg/dL, > 100 mg/dL), glycated hemoglobin (HbA1c) ($\leq 7\%$, $> 7\%$),

adherence to diabetes-specific diet (yes, no), physical activity practice (yes, no), insulin use (yes, no), years of education (≤ 8 years – incomplete primary education; > 8 years – completed primary education), income (1 minimum wage, more than 1 minimum wage), blood pressure, according to the Brazilian Hypertension Guidelines (SBC)[14] (systolic < 140 mmHg and diastolic < 90 mmHg – normal; otherwise – high), waist circumference, based on WHO reference values (normal: < 94 cm for men and < 80 cm for women; above these thresholds indicates increased risk).
All statistical analyses were performed using R software[15], with a significance level set at 5% ($p < 0.05$).

III. Result

The analysis of the quality of life domains revealed relatively similar mean scores, ranging from 2.67 to 2.93. The Satisfaction domain presented a mean score of 2.78±0.17, with minimum and maximum values between 2.50 and 3.10, indicating low variability among participants. The Impact domain had the lowest mean score (2.67±0.23), with a range from 2.40 to 3.20, suggesting a greater perceived burden in this area. In contrast, the Diabetes-Related Worries domain showed the highest mean score (2.93±0.30) and the widest range (2.30 to 3.80), reflecting greater heterogeneity in participant responses. Finally, the Overall score had a mean of 2.79±0.14, with a range from 2.40 to 3.20, indicating consistency in the global assessment.

Table 1. Domains of the quality of life instrument for the patients assessed. Brazil, 2025.

Domains	n	Mean±SD	Minimum	Máximum
Satisfaction	76	2,78±0,17	2,50	3,1
Impact	76	2,67±0,23	2,40	3,2
Diabetes-Related Worries	76	2,93±0,30	2,30	3,8
Overall	76	2,79±0,14	2,40	3,2

SD: Standard Deviation

In the analysis of the association between quality of life and clinical and sociodemographic variables, no statistically significant associations were observed ($p > 0.05$). Women presented a higher proportion of better quality of life (75.5%) compared to men (63.0%), although this difference was not statistically significant (OR = 1.80; 95% CI: 0.64–5.07; p = 0.295). Regarding age, participants aged 65 years or older showed a higher frequency of poorer quality of life (30.4%) compared to those under 65 years (25.0%) (p = 0.778) (Table 2).

Regarding nutritional status, a higher proportion of poorer quality of life was observed among individuals with obesity (35.1%), followed by those who were overweight (23.3%) and those with adequate weight (22.2%), with no statistically significant association (p = 0.696). Duration of diagnosis was also not associated with quality of life, as the frequency of poorer quality of life was similar between those with ≤20 years (30.4%) and >20 years since diagnosis (25.0%) (p = 0.778).

For clinical variables, no significant differences were observed in fasting blood glucose levels (p = 0.999) or glycated hemoglobin (p = 0.999) in relation to quality of life. Among participants who reported adhering to a diet, the majority exhibited better quality of life (71.8%), although this result was not statistically significant (p = 0.623).

A higher frequency of poorer quality of life was observed among those who did not engage in physical activity (25.4%) compared to those who did (46.2%), although the association did not reach statistical significance (p = 0.179). The use of insulin (p = 0.796), educational level (p = 0.990), income (p = 0.800), blood pressure (p = 0.999), and waist circumference (p = 0.680) also showed no statistically significant associations with quality of life.

Table 2. Association between quality of life clinical and sociodemographic variables. Brazil, 2025.

	Quality of life				
	Worse	Better	OR	95% CI	P-value
	n (%)	n (%)			
Sex					
Female	12 (24,5)	37 (75,5)	1		
Male	10 (37,0)	17(63,0)	1,80	0,64-5,07	0,295
Age					
< 65 years	5 (25,0)	15 (75,0)	1		
≥ 65 years	17 (30,4)	39 (69,6)	1,28	0,41-4,58	0,778
Body Mass Index (BMI)					
Adequate weight	2 (22,2)	7 (77,8)	1		
Overweight	7 (23,3)	23 (76,7)	1,03	0,18-8,95	0,999
Obesity	13 (35,1)	24 (64,9)	1,79	0,35-14,80	0,696
Time since diagnosis					
≤ 20 anos	17 (30,4)	39 (69,6)	1		
> 20 anos	5 (25,0)	15 (75,0)	0,78	0,22-2,42	0,778
Fasting blood glucose					

≤ 100	2 (28,6)	5 (71,4)	1		
> 100	20 (29,0)	49 (71,0)	0,98	0,18-8,13	0,999
Glycated hemoglobin (HbA1c)					
≤ 7%	4 (28,6)	10 (71,4)	0,99	0,24-3,48	0,99
> 7%	18 (29,0)	44 (71,0)	1		
Diet adherence					
No	2 (40,0)	3 (60,0)	1		
Yes	20 (28,2)	51 (71,8)	0,58	0,08-5,30	0,623
Physical activity					
No	16 (25,4)	47 (74,6)	1		
Yes	6 (46,2)	7 (53,8)	2,48	0,69-8,81	0,179
Insulin use					
No	14 (28,0)	36 (72,0)	1		
Yes	8 (30,8)	18 (69,2)	1,15	0,39-3,24	0,796
Education level					
≤ 8 years	16 (29,1)	70,9)	1,01	0,34-3,34	0,99
> 8 years	6 (28,6)	15 (71,4)	1		
Income (in minimum wages)					
1	10 (31,2)	22 (68,8)	1		
> 1	12 (27,3)	32 (72,7)	0,83	0,30-2,30	0,80
Blood pressure					
Normal	9 (28,1)	23 (71,9)	0,94	0,33-2,28	0,99
High	13 (29,5)	31 (70,5)	1		
Waist circumference					
Normal	3 (37,5)	5 (62,5)	1		
At risk	19 (27,9)	49 (72,1)	0,64	0,13-3,59	0,68

The multiple correspondence analysis with sociodemographic variables revealed a tendency toward separation between individuals with better and worse quality of life on the factorial plane. Although there is some overlap between the groups, individuals with poorer quality of life tend to cluster in the lower region of the graph (negative Dim2), whereas those with better quality of life are predominantly located in the upper region (positive Dim2). This distribution suggests that characteristics such as sex, age, education level, and income influence the perceived quality of life pattern (Figure 1).

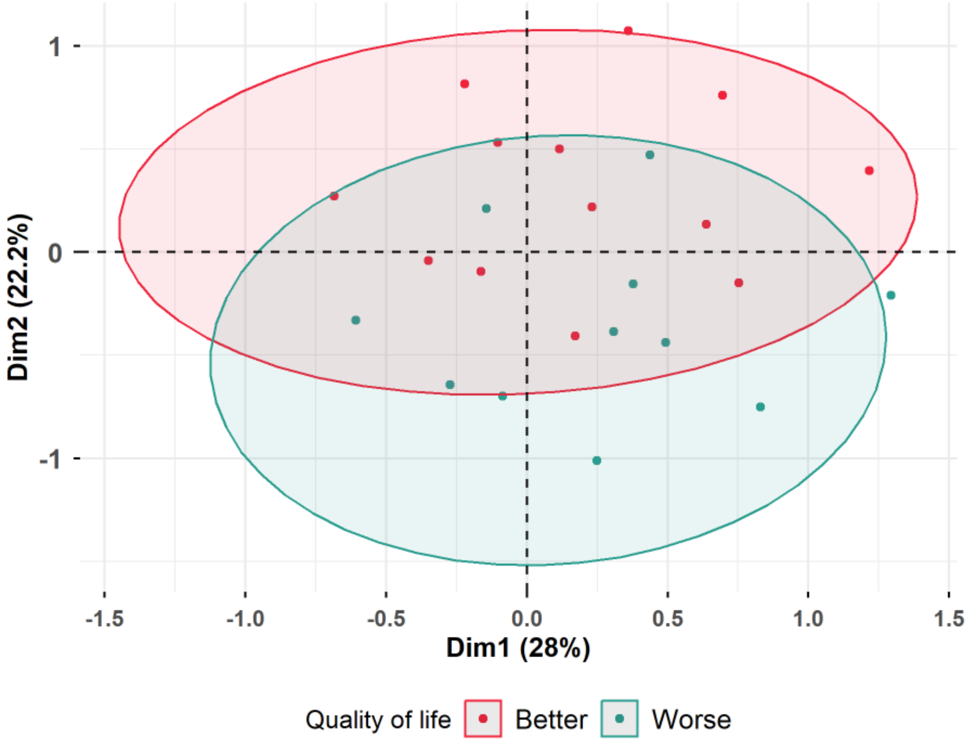

Figure 1. Representation of individuals on the factorial plane of the Multiple Correspondence Analysis (MCA) with sociodemographic variables (sex, age, education, and income), with confidence ellipses for the quality of life groups (better and worse).

Regarding clinical variables, the multiple correspondence analysis revealed substantial overlap between the groups with better and worse quality of life. The distribution of individuals on the factorial plane (Dim1 = 17.5%; Dim2 = 15.3%) does not indicate a clear separation between groups, suggesting that, within this dataset, the clinical characteristics considered did not exhibit a strongly discriminative pattern in relation to quality of life. Nevertheless, a slight tendency toward greater dispersion is observed in the group with better quality of life, which may indicate greater clinical heterogeneity within this group (Figure 2).

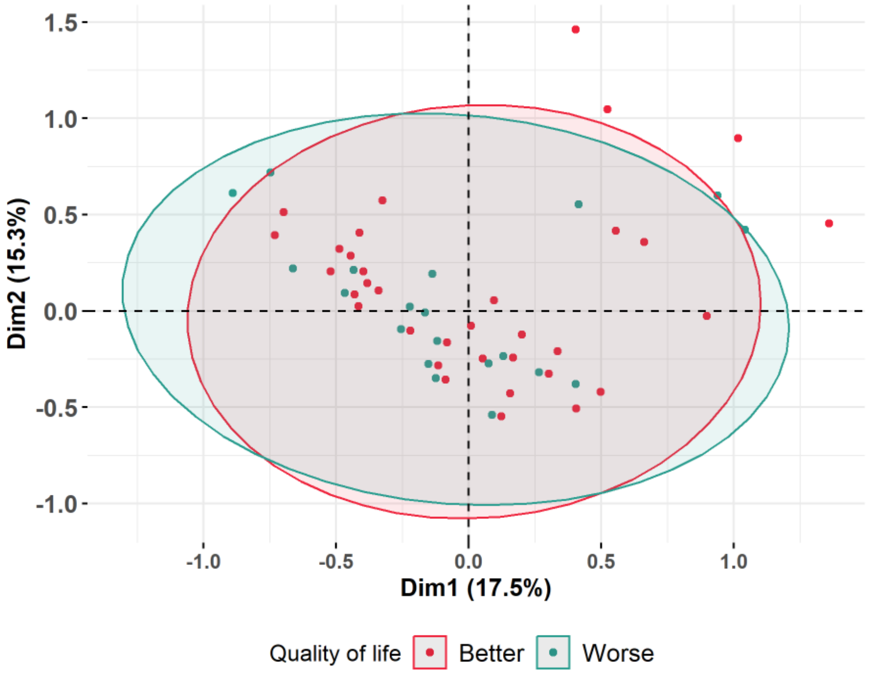

Figure 2. Representation of individuals on the factorial plane of the Multiple Correspondence Analysis (MCA), constructed using clinical variables (duration of diabetes diagnosis, dietary adherence, physical activity, insulin use, presence of hypertension, BMI, waist circumference, blood glucose, and glycated hemoglobin), with confidence ellipses for the quality of life groups (better and worse).

IV. Discussion

This study analyzed the factors associated with quality of life (QoL) in individuals with diabetes mellitus (DM), using a quantitative and multivariate approach in the context of Primary Health Care (PHC). The results indicated no statistically significant associations between clinical and sociodemographic variables and participants' QoL, although relevant trends were identified that warrant discussion in light of contemporary literature and public health care practices.

The analysis of the domains from the DQOL-Brazil revealed that "diabetes-related worries" was the domain with the greatest impact, highlighting the centrality of subjective and psychosocial dimensions in the experience of living with the disease. Recent studies have emphasized that emotional concerns, daily life restrictions, and social stigma play a decisive role in QoL, often outweighing the impact of objective clinical parameters[16,17]. This finding underscores the need for care models that incorporate psychosocial support strategies as part of routine healthcare[18].

Regarding sex differences, a trend toward better QoL was observed among women, although not statistically significant. In a population-based study conducted in Brazil, the female sex was associated with worse QoL indicators in DM, mainly due to the burden of social roles and a higher prevalence of comorbidities[19]. However, divergent results such as those presented here may reflect recent changes stemming from the strengthening of women-focused health policies, which have expanded access to regular follow-up and health education within the PHC context[20].

As expected, age was associated with a higher proportion of poorer QoL among older adults, although the difference was not significant. This finding is consistent with a large body of scientific evidence linking aging to greater clinical, functional, and social vulnerability[21,22]. Nonetheless, the homogeneity of the studied group and their inclusion in a territory with systematic follow-up by the Family Health Strategy may have attenuated more pronounced differences across age groups.

Traditional clinical variables emphasized in diabetes management, such as fasting blood glucose, glycated hemoglobin, and duration of diagnosis, were not significantly associated with QoL. This aligns with evidence suggesting that the perception of well-being extends beyond metabolic control, being shaped by factors such as social support, educational level, socioeconomic context, and individual resilience[23]. Thus, there is a need to broaden the biomedical perspective by incorporating social and subjective determinants of the health-disease-care process.

Physical activity showed a positive trend of association with better QoL, consistent with studies demonstrating the benefits of exercise on both clinical and emotional indicators in individuals with DM[24]. The lack of statistical significance may be due to difficulties in measuring the intensity, frequency, and regularity of physical activity in the studied population, as well as sample size limitations. Nevertheless, the result reinforces the importance of systematically promoting physical activity within the PHC framework[25].

The multiple correspondence analysis revealed that sociodemographic variables, such as sex, age, education, and income, had greater discriminative capacity in differentiating individuals' QoL than clinical factors. This finding reaffirms the weight of social determinants of health, which, according to the World Health Organization, are structural elements underpinning health inequities[3,26,27]. Accordingly, QoL in DM should be understood as a product of the material, cultural, and symbolic conditions that shape individuals' daily lives.

Regarding nutritional status, individuals with obesity showed lower QoL levels, corroborating findings that associate obesity with greater social stigma, poorer physical functioning, and challenges in therapeutic management[28]. Although not statistically significant, this trend points to the need for care strategies that integrate nutritional management, psychological support, and community-based assistance moving beyond individualized dietary prescriptions[29].

Another notable aspect is dietary adherence, which was associated with higher QoL scores, even without statistical significance. The literature shows that structured self-care practices, when supported by participatory educational processes and multidisciplinary teams, strengthen users' autonomy and motivation[30,31]. Therefore, the lack of statistical significance may reflect the sample size limitation rather than the absence of a relationship between the variables.

Overall, the results demonstrate that QoL in individuals with DM results from a complex interaction among clinical, psychosocial, and social dimensions, poorly captured by isolated analyses of biomedical parameters[32]. In this sense, studies like the present contribute to a paradigm shift in diabetes care, moving the focus away from isolated glycemic control toward comprehensive care, aligned with the principles of Brazil's Unified Health System (SUS).

Despite its contributions, the study has limitations. The cross-sectional design does not allow for causal inference, and the small, convenience-based sample may have limited the identification of statistically significant associations. Additionally, the use of self-reported instruments is subject to recall and interpretation biases. Nevertheless, the findings provide relevant insights for the formulation of public policies and comprehensive care strategies, particularly at the PHC level, and point to the need for longitudinal and interdisciplinary research on QoL in people with DM.

V. Conclusion

The results of this study highlight that the quality of life (QoL) of individuals with diabetes mellitus (DM) cannot be explained solely by clinical and metabolic parameters, as sociodemographic and psychosocial variables proved to be more relevant in understanding the perceived differences among individuals. Although no statistically significant associations were found, the identified trends reinforce the centrality of social determinants of health and the subjective experience of illness in shaping the perception of well-being. In this regard, it becomes essential that health care strategies go beyond the biomedical model, incorporating integrated actions in health education, psychosocial support, promotion of physical activity, and the strengthening of community networks.

In light of these findings, this study contributes to the field of public health by indicating that improving the quality of life in people with diabetes depends on equitable public policies that address social inequalities and promote user-centered, multiprofessional approaches. It is recommended that future research, with longitudinal designs and more representative samples, explore in greater depth the interactions between clinical, social, and behavioral determinants, enabling the development of more effective interventions. Ultimately, recognizing quality of life as a key outcome in diabetes care represents a strategic step toward strengthening the comprehensiveness of care within the Unified Health System (SUS).

References

[1]. Muzy J, Campos MR, Emmerick I, Silva RS, Schramm JMA. Prevalence Of Diabetes Mellitus And Its Complications And Characterization Of Gaps In Health Care From The Triangulation Of Research. Cad Saúde Pública. 2021;37(5):E00076120. Https://Doi.Org/10.1590/0102-311X00076120

[2]. Neves RG, Tomasi E, Silva Duro SM, Saes-Silva E, Saes MO. Complications From Diabetes Mellitus In Brazil: A National Base Study, 2019. Ciência & Saúde Coletiva. 2023;28(11):3183-3190. Https://Doi.Org/10.1590/1413-812320232811.11882022

[3]. Brevidelli MM, Oliveira AB, Rodrigues GVG, Gamba MA, Biello Lopes DE. Sociodemographic, Clinical And Psychosocial Factors Correlated With Self-Care In Diabetes. Rev Cuid. 2021 Aug;12(2):E2057. Https://Doi.Org/10.15649/Cuidarte.2057

[4]. Lima JVD, Neto ACC, Magalhães BC, Oliveira MS. Systematic Review On The Self-Care Of Individuals With Type 1 Diabetes Mellitus. Research, Society And Development. 2024;13(8):E6613846581 (CC BY 4.0), ISSN 2525-3409. Https://Dx.Doi.Org/10.33448/Rsd-V13i8.46581

[5]. Bendelaque DFR, Carvalho DNR, Silveira SCT, Sousa FJD, Andrade MC De, Aguiar VFF. Assessment Of Emotional Aspects And Self-Care Of Elderly Persons With Diabetes Mellitus. Cogitare Enferm. 2024;29:E90792. Https://Doi.Org/10.1590/Ce.V29i0.90792

[6]. Lopes LSN, Marin MJS, Gimenez FVM, Pio DAM, Nardo LRO. Metabolic Syndrome: Experiences In Relation To Healthcare. Texto Contexto Enferm. 2024;33:E20230190. Https://Doi.Org/10.1590/1980-265X-TCE-2023-0190en

[7]. Dames ABV, Campos LC, Mendonça VC, Costa MJM. Social Markers Of Difference In Primary Care: A Case Report On Awareness Of Diabetes Treatment For People In Social Vulnerability In The Sacavém Region. Rev. Est. Multidisc. UNDB. 2025 Jan 13;4(2). Https://Periodicos.Undb.Edu.Br/Index.Php/Rem/Article/View/276

[8]. Souza CL, Oliveira MV. Factors Associated With Glycemic Decontrol In Diabetes Mellitus Patients Served By The Unified Health System In Southwest Bahia. Cad Saúde Colet. 2020 Jan;28(1):153–64. Https://Doi.Org/10.1590/1414-462X202028010319

[9]. Moraes HAB, Mengue SS, Molina MCB, Cade NV. Factors Associated With Glycemic Control In A Sample Of Individuals With Diabetes Mellitus From The Brazilian Longitudinal Study Of Adult Health, Brazil, 2008 To 2010. Epidemiol Serv Saúde. 2020;29(3):E2018500. Https://Doi.Org/10.5123/S1679-49742020000300017

[10]. Sousa FCA, Luz KV Da, Lago EC, Silva WC, Silva FL, Monteiro AL, Santos HLS, Rodrigues JPP, Rocha ARFS, Silva VES, Fernandes VMP. Diabetes Mellitus: Health Promotion Focusing On Adequate Self-Care Among SUS Users. RBONE. 2022 Aug 6;15(98):1177-85. Https://Www.Rbone.Com.Br/Index.Php/Rbone/Article/View/1465

[11]. Malta DC, Bernal RTI, Sá ACMGN De, Silva TMR Da, Iser BPM, Duncan BB, Et Al. Self-Reported Diabetes And Associated Factors In The Brazilian Adult Population: National Health Survey, 2019. Ciênc Saúde Coletiva. 2022;27(7):2643-53. Https://Doi.Org/10.1590/1413-81232022277.02572022

[12]. Correr CJ, Pontarolo R, Melchiors AC, Rossignoli P, Fernández-Llimós F, Radominski RB. Translation Into Portuguese And Validation Of The Diabetes Quality Of Life Measure (DQOL-Brazil). Arq Bras Endocrinol Metab. 2008 Apr;52(3):515-22. Https://Doi.Org/10.1590/S0004-27302008000300012

[13]. Pititto B, Dias M, Moura F, Lamounier R, Calliari S, Bertoluci M. Treatment Goals In Diabetes. Official Guideline Of The Brazilian Diabetes Society (2023). Https://Doi.Org/10.29327/557753.2022-3

[14]. Feitosa ADM, Et Al. Brazilian Guidelines For Blood Pressure Measurements In And Out Of The Clinic – 2023. Arq Bras Cardiol. 2024;121(4):E20240113. Https://Doi.Org/10.36660/Abc.20240113

[15]. R Core Team (2020). R: A Language And Environment For Statistical Computing. R Foundation For Statistical Computing, Vienna, Austria. Https://Www.R-Project.Org/

[16]. Costa ED, Santos PN Dos, Silva KB Da. The Impact Of Type 2 Diabetes Mellitus On Quality Of Life. Rev. Foco. 2024 Apr 30;17(4):E5003. Https://Ojs.Focopublicacoes.Com.Br/Foco/Article/View/5003

[17]. Pititto B, Dias M, Moura F, Lamounier R, Calliari S, Bertoluci M. Treatment Goals In Diabetes. Official Guideline Of The Brazilian Diabetes Society (2023). Https://Doi.Org/10.29327/557753.2022-3

[18]. Tonetto IF De A, Baptista MHB, Gomides DS, Pace AE. Quality Of Life Of People With Diabetes Mellitus. Revista Da Escola De Enfermagem Da USP. 2019;53:E03424. Https://Doi.Org/10.1590/S1980-220X2018002803424

[19]. Oliveira EVM, Resende MA. Psychosocial Intervention Workshops In Search Of Better Adherence To Diabetes Mellitus Treatment: An Experience Report. Revext. 2023 Jun 26;10(19):267-95. Https://Publicacoes.Ifc.Edu.Br/Index.Php/Revext/Article/View/3392

[20]. Santos RLB Dos, Campos MR, Flor LS. Factors Associated With Quality Of Life Of Brazilians And Of Diabetics: Evidence From A Population-Based Survey. Ciênc Saúde Coletiva. 2019 Mar;24(3):1007-20. Https://Doi.Org/10.1590/1413-81232018243.09462017

[21]. Souto K, Moreira MR. National Policy Of Comprehensive Women's Health Care: The Protagonism Of The Women's Movement. Saúde Debate. 2021 Jul;45(130):832-46. Available From: Https://Doi.Org/10.1590/0103-1104202113020)

[22]. Francisco PMSB, Assumpção D, Bacurau AGM, Silva DSM, Yassuda MS, Borim FSA. Diabetes Mellitus In Older Adults, Prevalence And Incidence: Results From The Fibra Study. Rev Bras Geriatr Gerontol. 2022;25(5):E210203. Https://Doi.Org/10.1590/1981-22562022025.210203.Pt

[23]. Rodacki M, Cobas RA, Zajdenverg L, Silva Júnior WS, Giacaglia L, Calliari LE, Et Al. Diagnosis Of Diabetes Mellitus. Official Guideline Of The Brazilian Diabetes Society (2024). Https://Doi.Org/10.29327/5412848.2024-1

[24]. Silva Júnior WS, Fioretti A, Vancea D, Macedo C, Zagury R, Bertoluci M. Physical Activity And Exercise In Pre-Diabetes And Type 2 Diabetes. Official Guideline Of The Brazilian Diabetes Society (2023). Https://Doi.Org/10.29327/557753.2022-8

[25]. Carvalho FFB De, Sposito LAC, Vieira LA. Participatory Brazil: Bodily Practices And Physical Activities In The Unified Health System In The 2024-2027 Multi-Year Plan. Interface (Botucatu). 2024;28:E230524. Https://Doi.Org/10.1590/Interface.230524

[26]. Osawa CR, Bertochi GFA, Pegorari MS, Walsh IAP De, Martins LJP. Socioeconomic Factors, Lifestyle Habits, And Health Of Elderly Women With And Without Sexual Activity In A Municipality In The Interior Of Minas Gerais. Rev Bras Geriatr Gerontol. 2023;26:E230084. Https://Doi.Org/10.1590/1981-22562023026.230084.Pt

[27]. Mario CGD. Social Determinants Of Health: Notes For A Critical Approach. Mediações. 2023;28(3):E47718. Https://Doi.Org/10.5433/2176-6665.2023v28n3e47718

[28]. Bazoni PS, Faria RJ, Santos JBR, Silva MRR. Health-Related Quality Of Life In Individuals With Obesity In The Southern Region Of Espírito Santo. RBONE - Brazilian Journal Of Obesity, Nutrition, And Weight Loss. 2025;19(120):471-483. Https://Www.Rbone.Com.Br/Index.Php/Rbone/Article/View/2762

[29]. Ramos S, Campos LF, Strufaldi DRBM, Gomes DL, Guimarães DB, Souto DL, Et Al. Nutritional Therapy In Pre-Diabetes And Type 2 Diabetes Mellitus. Official Guideline Of The Brazilian Diabetes Society (2023). Https://Doi.Org/10.29327/5238993.2023-8

[30]. Suplici SER, Meirelles BHS, Silva DMGV Da, Boell JEW. Self-Care Adherence Among People With Diabetes Mellitus In Primary Health Care: A Mixed-Methods Study. Esc Anna Nery. 2021;25(5):E20210032. Https://Doi.Org/10.1590/2177-9465-EAN-2021-0032

[31]. Grillo M De FF, Neumann CR, Scain SF, Rozeno RF, Gross JL, Leitão CB. Effect Of Different Modalities Of Education For Self-Care In Patients With Diabetes. Rev Assoc Med Bras. 2013 Jul;59(4):400-5. Https://Doi.Org/10.1016/J.Ramb.2013.02.006

[32]. Rodrigues G, Malerbi F, Pecoli P, Forti A, Bertoluci M. Psychosocial Aspects Of Type 1 And Type 2 Diabetes. Official Guideline Of The Brazilian Diabetes Society (2023). Https://Doi.Org/10.29327/557753.2022-23