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Non-attenders at Type 2 Diabetes Follow-up Appointments:

Who Are They and What Are Their Reasons?

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Diabéticos tipo 2 que faltam às consultas de seguimento:
Quem são e quais são as suas razões?

Non-attenders at Type 2 Diabetes Follow-up Appointments:
Who Are They and What Are Their Reasons?

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RESUMO

Introdução: A diabetes tipo 2 (DMT2) é uma doença crónica com elevada prevalência a nível mundial. As consultas de seguimento desta patologia ao nível dos cuidados primários são essenciais para vigiar o estado de saúde do paciente, ajustar o plano de tratamento, fornecer orientação e educação contínuas, e prevenir ou identificar precocemente complicações associadas à diabetes. Contudo, verifica-se uma ausência significativa a essas consultas.

Objetivo: Caracterizar a população de pacientes com DMT2 que não comparece às consultas de seguimento, em termos sociodemográficos e clínicos, e determinar as razões subjacentes a essa não comparência. Além disso, avaliar a qualidade de recrutamento e randomização destes pacientes para um futuro ensaio clínico.

Métodos: Selecionámos os pacientes, não residentes em lar de idosos, que faltaram a pelo menos uma consulta de seguimento da DMT2, entre outubro de 2022 e outubro de 2023 (n=138). Colhemos os dados sociodemográficos e clínicos mais recentes destes pacientes e realizamos uma alocação equitativa e aleatória, entre o grupo de intervenção (n=69) e o grupo de controlo (n=69) para um futuro ensaio clínico. Tentamos estabelecer contato telefónico com os pacientes do grupo de intervenção para aplicar um questionário, que investigou o conhecimento sobre a necessidade de consultas de seguimento a cada 6 meses, as razões para a não comparência e sugestões de melhoria nos cuidados primários para aumentar a comparência nas consultas de DMT2. Obtivemos 55 respostas.

Resultados: Os pacientes com DMT2 que não compareceram às consultas de seguimento eram, na sua maioria, homens (53,2%) e apresentavam uma idade média de 67 anos, variando entre os 37 e 97 anos. A média da HbA1c foi de 7,42 ± 1,61%, e o IMC médio foi de 29,95 ± 5,84 Kg/m^2. Os grupos de intervenção e controlo tiveram características homogéneas. Entre os que responderam ao questionário (n=55), a média do tempo de evolução da DMT2 foi de 11,41 ± 10,70 anos, sendo que 23,6% não estavam cientes da necessidade de realizar consultas de seguimento a cada 6 meses. A razão predominante para a não comparência às consultas de seguimento foi o esquecimento (32,7%), seguido por compromissos de trabalho (25,5%). As sugestões mais frequentes para melhorar a participação foram a redução do tempo de espera (n=6) e o fornecimento de transporte para as consultas (n=4).

Discussão e Conclusão: Os resultados sugerem que a ausência nas consultas de seguimento da DMT2 está associada a um pior controlo glicémico, em comparação com a população com diabetes em geral. As razões citadas pelos pacientes, juntamente com as suas sugestões, oferecem informações valiosas sobre áreas críticas a serem abordadas para aumentar a participação nas consultas de seguimento.

Palavras-chave: Diabetes Mellitus tipo 2; Pacientes que não Compareçem; Agenda Médica; Cuidados de Saúde Primários; Inquéritos e Questionários;

ABSTRACT

Background: Type 2 diabetes (DMT2) is a chronic disease with high prevalence worldwide. Follow-up appointments for this condition at the primary care level are essential to monitor the patient's health, adjust the treatment plan, provide continuous guidance and education, and prevent or early identify complications associated with diabetes. However, a significant number of these patients do not attend scheduled appointments.

Purpose: To characterize the population of patients with T2DM who do not attend follow-up appointments, in sociodemographic and clinical terms, and to determine the underlying reasons for this non-attendance. Additionally, to assess the quality of recruitment and randomization of these patients for a future clinical trial.

Methods: We selected patients, not residing in nursing homes, who missed at least one T2DM follow-up appointment between October 2022 and October 2023 (n=138). We collected the most recent sociodemographic and clinical data from these patients and performed an equitable and random allocation between the intervention group (n=69) and the control group (n=69) for a future clinical trial. We attempted to establish telephone contact with the patients from the intervention group to administer a questionnaire that investigated the knowledge about the need for follow-up appointments every 6 months, the reasons for non-attendance, and suggestions for improving primary care to increase attendance at DMT2 appointments. We obtained 55 responses.

Results: Patients with T2DM who did not attend follow-up appointments were mostly men (53.2%) with an average age of 67 years, ranging from 37 to 97 years. The mean HbA1c was 7.42 ± 1.61%, and the mean BMI was 29.95 ± 5.84 kg/m^2. The intervention and control groups had homogeneous characteristics. Among those who responded to the questionnaire (n=55), the average duration of T2DM was 11.41 ± 10.70 years, and 23.6% were unaware of the need for follow-up appointments every 6 months. The main reason for non-attendance at follow-up appointments was forgetfulness (32.7%), followed by work commitments (25.5%). The most frequent suggestions to improve attendance were reducing waiting times (n=6) and providing transportation to appointments (n=4).

Conclusion: The results suggest that missing T2DM follow-up appointments is associated with poorer glycemic control compared to the general population with diabetes. The reasons cited by patients, along with their suggestions, provide valuable insights into critical areas that need to be addressed to increase participation in follow-up appointments.

Keywords: Diabetes Mellitus, Type 2; No-Show Patients; Appointments and Schedules; Primary Health Care; Surveys and Questionnaires.

LIST OF ABBREVIATIONS

T2DM - Type 2 Diabetes Mellitus

HbA1c - Glycated Hemoglobin

TC - Total Cholesterol

LDL-C - Low-Density Lipoprotein Cholesterol

HDL-C - High-Density Lipoprotein Cholesterol

TG - Triglycerides

BP - Blood Pressure

BMI - Body Mass Index

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INTRODUCTION

Diabetes is a chronic metabolic condition that affects 537 million individuals worldwide. According to the International Diabetes Federation, this number is estimated to reach 783 million by 2045, making diabetes one of the 21st century's fastest-growing global health emergencies. (1) In 2021, Diabetes was estimated to affect 14.1% of the Portuguese population aged between 20 and 79 years, maintaining its position as one of the highest prevalence rates in Europe. (2)

Type 2 diabetes (T2DM) constitutes the overwhelming majority (over 90%) of diabetes cases on a global scale. (1) While advancements in medical science have led to a better understanding of this condition and the development of innovative treatment strategies, effective diabetes management largely hinges on regular healthcare appointments (at least every 3–6 months). (3) These appointments should be patient-centered, with a focus on lifestyle management and diabetes self-management education and support, to prevent complications and optimize quality of life. (4, 5) Nevertheless, it's a well-established fact that a significant number of patients diagnosed with diabetes don't attend their scheduled appointments, leading to non-attendance rates ranging from 10% to 30%. (6) The phenomenon of non-attendance at diabetes appointments, often referred to as "missed appointments" or "no-shows," is a multifaceted issue with far-reaching implications for both patients and healthcare systems. It can contribute to uncontrolled blood glucose levels, increased risk of complications, and a strain on healthcare resources. (6-8) Regarding hospital admissions, the evidence is somewhat uncertain. One study suggests that among individuals with diabetes who hadn't been previously hospitalized, missing their scheduled primary care appointment did not significantly increase the likelihood of future hospitalization over six-months when compared to those who attended. Nevertheless, within the same study, it was observed that if individuals who had recently been discharged from the hospital missed their scheduled primary care appointment, their risk of future hospitalization was 60% higher than those who attended their appointment. (9) A more recent study also demonstrated that patients who missed their appointments experienced an increase in hospital admissions, even when compared to patients who canceled and rescheduled before their scheduled appointment. (10)

Understanding the reasons or factors behind non-attendance among T2DM patients is essential to mitigate its adverse effects and develop strategies for improving diabetes care. Three recent systematic reviews investigate the factors contributing to missed appointments. Lee's review, in 2019, analyzed 24 studies involving patients with T2DM or hypertension and identified a total of 83 factors associated with missed appointments, which were categorized into three main groups: patient-related factors (including mental state, demographics, alcohol and tobacco use, knowledge/beliefs/attitudes), medication and disease-related factors, and

healthcare provider-related factors (covering scheduling factors, provider characteristics, and doctor-patient relationship factors). (11) Similarly, in 2020, Sun conducted a review encompassing 18 articles addressing the factors related to missed appointments in adults with T2DM. The factors were also classified into three primary categories: patient characteristics, healthcare system and provider factors, and interpersonal factors, which consider how patients perceive or evaluate their care. Patient characteristics were further divided into sociodemographic, health status, disease knowledge, behavior or attitudes and risk/protective behavior, social support and other factors like transportation, personality, and weather. (12) Lastly, Brewster led an additional systematic review covering 34 studies involving both adult and young individuals with diabetes. This review, published in 2020, aimed to characterize non-attenders based on factors such as age, gender, duration of diabetes, employment status, socio-economic pressures, parenthood, ethnicity, cultural influences, illness perceptions, attitudes, and others (co-morbidities, participation in diabetes education, and insulin treatment within the context of T2DM). Furthermore, this review summarized features associated with missed appointments (eg longer intervals between appointments, appointments scheduled on Sundays), and interventions aimed at improving attendance. (6) An important limitation in these reviews is the wide variation among the studies in terms of study design, research settings, definitions of missed appointments, and characteristics of the study samples. This heterogeneity has led to reduced comparability among the studies, resulting in inconsistent findings, which presents a challenge when attempting to reach robust conclusions. (6, 11, 12)

Therefore, given the inconsistency in findings worldwide and the absence of studies conducted within the Portuguese context, we plan to investigate T2DM patients who do not attend follow-up primary care appointments in two ways:

- Characterizing them sociodemographically and clinically.
- Conducting telephone interviews with a randomized sample to understand the reasons for non-attendance in primary care and gather suggestions for improving accessibility, which can be subsequently implemented.

We also intend to evaluate the feasibility and quality of recruitment for a future clinical trial.

METHODS

Study Design

This research work consists of an observational cross-sectional study conducted through telephone interviews in the population of patients with T2DM who did not attend their diabetes follow-up appointment in four primary healthcare units. It represents the initial phase of a randomized controlled clinical trial, and it is aimed to understand the feasibility and accuracy of its recruitment.

The trial aims to assess the impact of this phone call on the same population, comparing disease control variables and appointment frequency before and 12 months after the phone call, in both intervention and control groups. The project has obtained approval from the Ethics Committee of the Central Regional Health Administration (Attachment I), as well as from the coordinators of the four primary healthcare units (Attachment II).

Participant selection

Through the MIM@UF platform, we obtained the list of users with a scheduled diabetes surveillance nursing appointment from October 2022 to October 2023 at Family Health Unit (FHU) Coimbra Centro, FHU Coimbra Norte, FHU Nautilus, and FHU Caminhos do Cértoma. We used the indicator ID: 2013.037.01 FL, representing the proportion of individuals with diabetes who had a surveillance nursing appointment in the last year. This indicator was chosen based on the recommendation that diabetic patients should have a nursing appointment before a medical consultation. Patients whose doctors were absent for more than 30 consecutive days were excluded from the study.

Subsequently, we analyzed each patient's clinical medical record and selected those with T2DM who missed at least one diabetes follow-up medical appointment during the specified period, totaling 169 patients. Within this group, 31 were excluded from the study as they were registered as residents in nursing homes, which are themselves responsible (according to Normative Order Nº 67/89 that establishes the standards regulating the conditions for the installation and operation of for-profit homes supporting the elderly) for guaranteeing the provision of all necessary care, including medical and nursing care. Considering this normative guidance, it is plausible to infer that the absence of these patients from diabetes follow-up appointments in primary health care can be attributed to the fact that they already receive medical care at the nursing home.

The remaining 138 patients were allocated to either the control group (without a telephone interview) or to the intervention group (with a telephone interview) through a simple

randomization process. To carry out this process, we extracted each patient's medical record number and created a sequential list. We then used the random.org platform to generate a random order for all medical record numbers in the list. The first 69 patients in the resulting order were assigned to the intervention group, while the remaining 69 were allocated to the control group. (Figure 1)

We attempted to establish phone contact with the 69 patients assigned to the intervention group. During this time, each patient was contacted at least three times on five different days, but 12 participants did not answer the calls. Of those who answered, 55 expressed willingness to participate in the study, thus constituting the effective intervention group, while 2 declined to participate. (Figure 1)

Figure 1 – Flowchart diagram of the participant selection process. T2DM, type 2 diabetes mellitus.
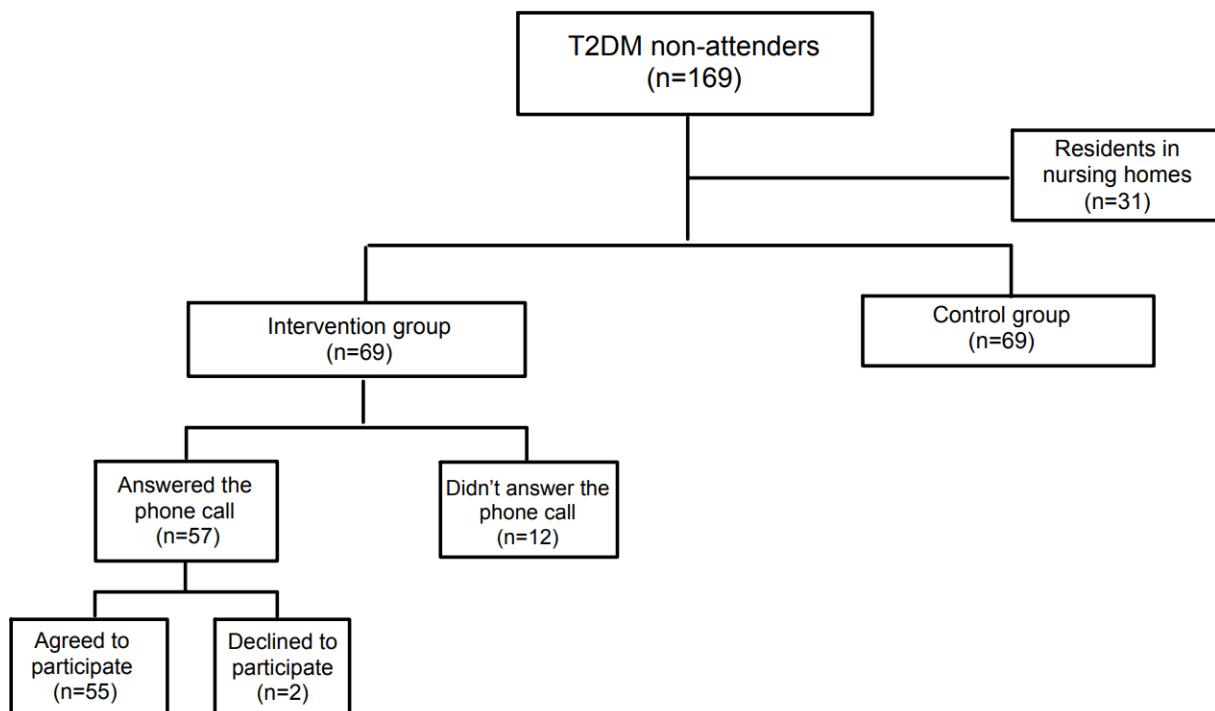
Data collection

The data collection process was conducted through telephone interviews from 11/01/2024 to 19/01/2024. Each phone call began with a clear explanation of the scope of the study and the purpose of the call. In this introduction, the voluntary nature of participation was emphasized, clarifying that the patient had the option of accepting or refusing participation. After this initial explanation, verbal consent was requested from the patient. In case of refusal,

the investigator expressed gratitude for the availability and ended the call.

The evaluation instrument used in the phone interview, for those who agreed to participate, was a semi-structured questionnaire (Attachment III), lasting approximately 5 to 10 minutes. This questionnaire covered a variety of sociodemographic data, including age, sex, marital status, employment status, number of years of education, and household income. Additionally, the questionnaire incorporated the latest data regarding metabolic control, which were obtained from the medical record or provided by the participants themselves. These data included the time elapsed since diagnosis, levels of glycated hemoglobin (HbA1c), total cholesterol (TC), Low-density lipoprotein cholesterol (LDL-C), high-density lipoprotein cholesterol (HDL-C), triglycerides (TG), systolic and diastolic blood pressure (BP), as well as weight and height for calculating the Body Mass Index (BMI).

The questionnaire also assessed the patient's knowledge about the need to have diabetes follow-up appointments every 6 months, the reasons for not attending these appointments, and the presence or absence of difficulties in accessing the primary healthcare unit. For a more detailed characterization, we described the health status of these patients in three dimensions: mobility, self-care, and usual activities, using the Portuguese version of the EQ-5D-3L. (13-15) Additionally, we investigated the possibility of appointment times making it difficult to attend appointments and requested suggestions on how diabetes follow-up at the primary healthcare unit could be improved.

As for the patients allocated to the control group (n=69) and those who did not answer the call (n=12), sociodemographic data (sex and age) and data related to the latest metabolic control (HbA1c, TC, LDL-C, HDL-C, TG, systolic and diastolic BP, weight, and height) were collected through the last register in the medical record.

Data Analysis

The collected data was recorded and organized in a Microsoft Excel® database, and subsequently, statistical analysis was carried out using the Statistical Package for the Social Sciences (SPSS®) version 28.0.

Initially, we conducted a descriptive statistical analysis to detail the characteristics of the participants, the patients who did not answer the phone call, and the patients in the control group. Quantitative variables are presented as mean, standard deviation, maximum value, and minimum value. Meanwhile, qualitative variables are presented through the calculation of absolute frequencies (n) and relative frequencies (%).

To perform the inferential statistical analysis, we checked the normal distribution of the variables using the Kolmogorov-Smirnov test (n ≥30). Since most variables did not exhibit a normal distribution ($p < 0.05$), we utilized non-parametric tests.

In the inferential statistical analysis, aiming to understand the baseline differences among patients from the effective intervention group, the control group, and those who did not respond, concerning the quantitative variables under study, we employed the non-parametric Mann-Whitney U test. Additionally, for the categorical variable gender, we used the Chi-square test. We considered a significant statistical p-value of less than 0.05. This approach was made to ensure the validity of the results, allowing us to confirm randomness in participant selection and investigate whether the non-response of some individuals introduced bias into the sample.

RESULTS

We describe the total sample of 124 individuals diagnosed with T2DM who will participate in the clinical trial. As evidenced in the results of the analysis, presented in Table 1, the mean age was 67.13 ± 13.03, ranging from 37 to 97 years, with 53.2% being male. Clinically, in the last measurement, the mean HbA1c value was 7.42 ± 1.61%, with a minimum value of 5.1% and a maximum value of 12.2%. The observed mean systolic blood pressure was 134.64 ± 15.78 mmHg, and the mean diastolic blood pressure was 77.38 ± 10.29 mmHg. BMI ranged from 19.39 to 51.07 kg/m2, with a mean value of 29.95 ± 5.84 kg/m^2. Regarding lipid parameters, they are detailed in table 1.

Table 1 – Characteristics of the total sample, effective intervention group and control group

Variable	Total sample (n=124)	Effective intervention group (n=55)	Control group (n=69)	P value
Age (years)				0.145[a]
Mean ± SD	67.13 ± 13.03	65.53 ± 13.24	68.41 ± 12.82	
Minimum/Maximum	37/ 97	37/ 97	42/ 90	
Sex				0.368[b]
Male	66 (53.2%)	32 (58.2%)	34 (49.3%)	
Female	58 (46.8%)	23 (41.8%)	35 (50.7%)	
HbA1c (%)				0.374[a]
Mean ± SD	7.42 ± 1.61	7.34 ± 1.65	7.48 ± 1.58	
Minimum/Maximum	5.1/ 12.2	5.2 / 11.5	5.1/ 12.2	
Total cholesterol (mg/dL)				0.342[a]
Mean ± SD	176.19 ± 46.32	181.75 ± 51.57	171.75 ± 41.52	
Minimum/Maximum	71/ 297	71/ 297	87/ 289	
LDL-C (mg/dL)				0.927[a]
Mean ± SD	95.93 ± 41.47	96.31 ± 44.72	95.63 ± 39.07	
Minimum/Maximum	7.6/ 203	16/ 203	7.6/ 201.6	
HDL-C (mg/dL)				0.942[a]
Mean ± SD	48.35 ± 15.34	47.92 ± 15.18	48.69 ± 15.57	
Minimum/Maximum	21/ 106	21/ 88	26/ 106	
TG (mg/dL)				0.090[a]
Mean ± SD	170.34 ± 141.04	197.85 ± 181.59	148.50 ± 93.53	
Minimum/Maximum	44/ 1151	49/ 1151	44/ 517	
Systolic BP (mmHg)				0.391[a]
Mean ± SD	134.64 ± 15.78	133.76 ± 18.45	135.35 ± 13.36	
Minimum/Maximum	86/ 190	86/ 190	104/ 173	
Diastolic BP (mmHg)				0.797[a]
Mean ± SD	77.38 ± 10.29	77.07 ± 11.37	77.63 ± 9.41	
Minimum/Maximum	55/ 110	55/ 110	56/ 101	
BMI (kg/m^2)				0.279[a]
Mean ± SD	29.95 ± 5.84	29,30 ± 5.24	30.50 ± 6.30	
Minimum/Maximum	19.39/ 51.07	19.77/ 44.77	19.39/51.07	

[a] p value calculated with the Mann-Whitney U test; [b] p value calculated with the chi-square test.

According to the results of the Mann-Whitney U test and the Chi-square test, there were no statistically significant differences in the sociodemographic and clinical variables under study between the effective intervention group and the control group.

Given that out of the 69 patients allocated to the intervention group, 12 did not answer the phone call, we compared their sociodemographic and clinical variables with those of the effective intervention group, finding no statistically significant differences between the two (Table 2).

Table 2 – Characteristics comparison between Effective Intervention Group and "Did not answer the phone call" group

	Age	Sex	HbA1c	Total cholesterol	LDL-C	HDL-C	TG	Systolic BP	Diastolic BP	BMI
P value	0.695 [a]	0.349 [b]	0.128 [a]	0.630 [a]	0.151 [a]	0.708 [a]	0.822 [a]	0.877 [a]	0.301 [a]	0.810 [a]

[a] p value calculated with the Mann–Whitney U test; [b] p value calculated with the chi-square test.

Regarding the effective intervention group, which underwent a telephone questionnaire, a more comprehensive sociodemographic characterization was performed (Table 3). In terms of education, the mean number of years of education for this group was 8.13 ± 4.19 years, ranging from 0 to 17 years. Additionally, it was observed that, on average, the time elapsed since the T2DM diagnosis was 11.41 ± 10.70 years, varying from 1 to 54 years.

Table 3 – Socioeconomic and QOL characterization of the effective intervention group

|		n	Percentage
Marital Status	Married	38	69,1%
	Single	5	9,1%
	Widowed	8	14,5%
	Divorced	4	7,3%
Employment status	Employed	23	41,8%
	Unemployed	5	9,1%
	Retired	24	43,6%
	Disabled	3	5,5%
Household income	Higher than the national minimum wage	32	58,2%
	Equal to the national minimum wage	10	18,2%
	Lower than the national minimum wage	13	23,6%
Mobility	I have no problems in walking about	36	65,5%
	I have some problems in walking about	15	27,3%
	I am confined to bed	4	7,3%
Self-care	I have no problems with self-care	45	81,8%
	I have some problems washing or dressing myself	6	10,9%
	I am unable to wash or dress myself	4	7,3%
Usual activities	I have no problems with performing my usual activities	43	78,2%
	I have some problems with performing my usual activities	7	12,7%
	I am unable to perform the usual activities	5	9,1%

National minimum wage – €760 gross per month (Portugal)

In the questionnaire conducted through phone calls, participants were queried about their awareness of the necessity for diabetes follow-up appointments every 6 months. The results revealed that 42 participants (76.4%) acknowledged this need, while 13 participants (23.6%) reported being unaware. Regarding the perceived difficulty in accessing the primary healthcare unit, the majority—comprising 41 participants (74.5%)—stated they faced no challenges, whereas 14 participants (25.5%) expressed the opinion that access presented difficulties.

Figure 2 provides a visual representation of the reasons reported by patients for missing their appointments. Among the various reasons given for non-attendance, forgetfulness was the most prevalent, accounting for 32.7% of cases. Work commitments were cited as the second most common reason, constituting 25.5% of reported cases. Additionally, 14.5% of patients indicated being followed up at the hospital, while 7.3% reported being hospitalized at the time of the appointment. Family commitments were identified by 5.5% of participants, while

3.6% mentioned being followed up at private practices. Another 3.6% cited residing in a nursing home as the reason for missing their appointments.
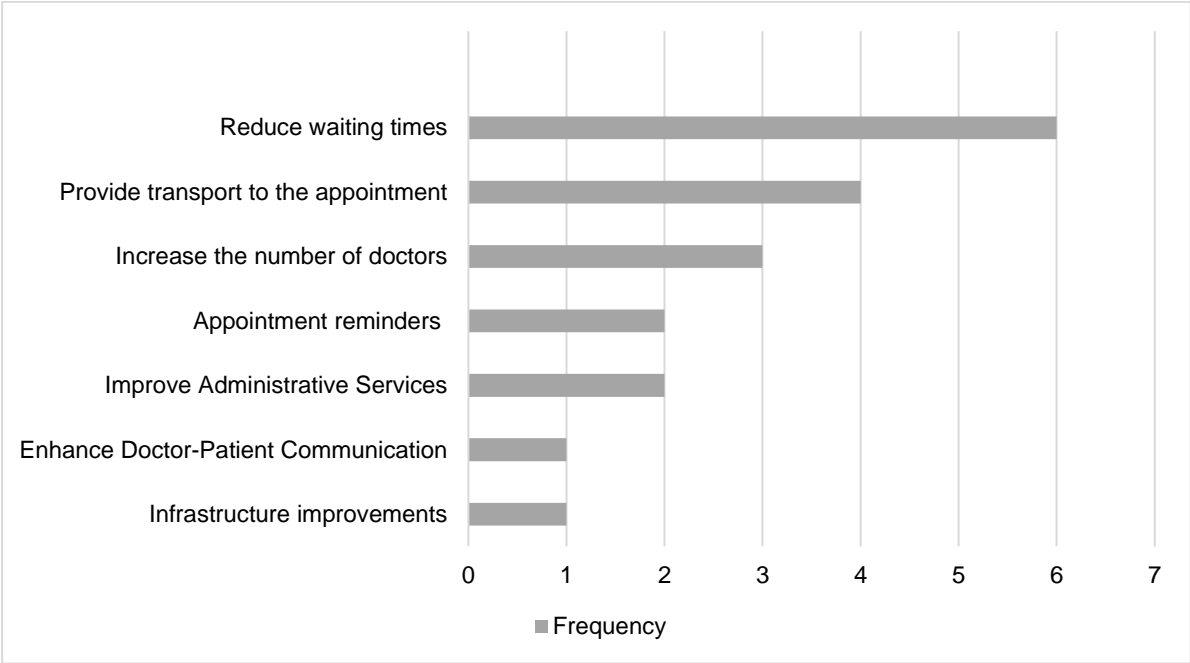
Figure 2 – Reasons for non-attendance
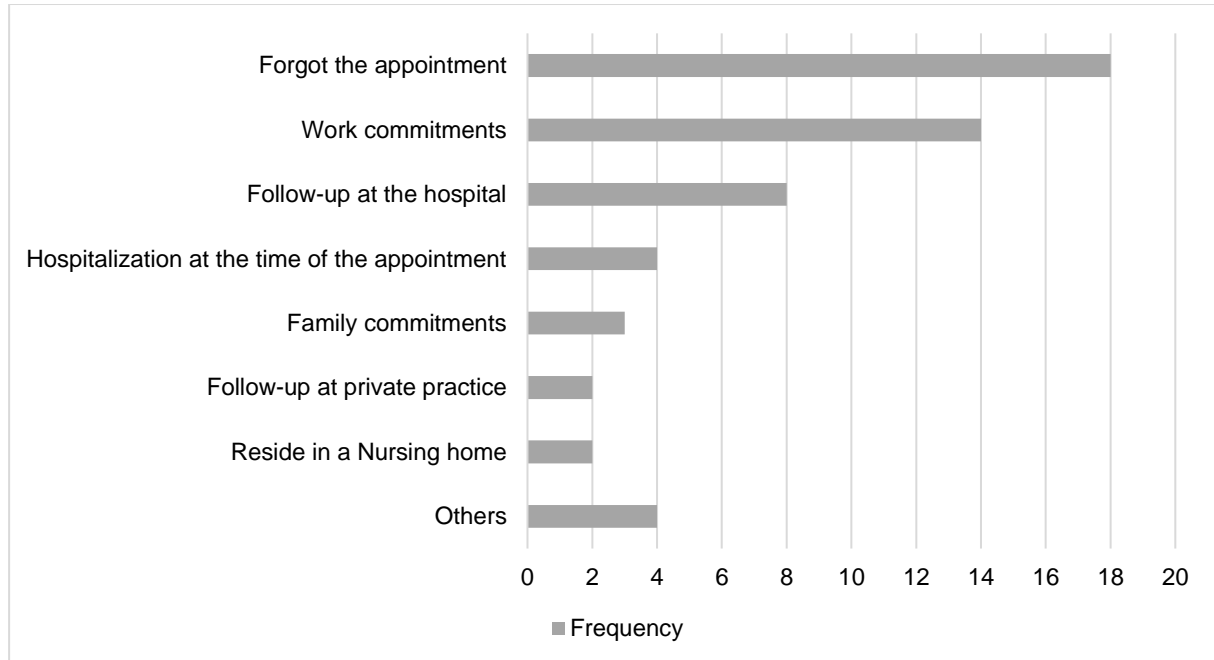
Other reasons provided by patients for non-attendance at the appointment included being on vacation (n=1), waiting too long (n=1), having another appointment scheduled at that time (n=1), and one patient reported a sense of well-being, perceiving the appointments as unnecessary. When directly queried about the impact of appointment times on attendance, 10 participants (18.2%) affirmed that it played a role, whereas the remaining 45 participants did not consider the timing of appointments to be a deterrent.

Figure 3 summarizes the recommendations provided by patients when queried about potential improvements to the primary healthcare unit with the objective of enhancing attendance. Among the 55 participants, 19 offered suggestions. The most prevalent recommendation was the reduction of waiting times, followed by the provision of transport for appointments and an increase in the number of medical staff. Additionally, the suggestion to remind patients of their imminent appointments via Short Message Service (SMS) or phone call was noteworthy. Two patients advocated for the improvement of administrative services, specifically emphasizing the need for enhanced responsiveness from the secretary, as instances of unanswered calls/emails were common. The enhancement of both doctor-patient communication and healthcare infrastructure was also highlighted by participants.

Figure 2 – Suggestions to improve attendance

DISCUSSION

The goal of this study was to characterize sociodemographic and clinical profiles of T2DM patients who did not attend their scheduled follow-up primary care appointment and to identify the reasons for their non-attendance. Additionally, it aimed to evaluate the feasibility and quality of recruitment for the future clinical trial.

Our sample demonstrated significant similarities with the Portuguese population affected by diabetes. The average age, established at 67.13 years, is within the age range with the highest prevalence of diabetes (60-79 years), and the distribution by gender, more prevalent among men, reflects the trend observed in the general population. (2)

However, in clinical terms, the average HbA1c value was 7.42%, which appears to be higher than the national average of 6.8% observed in 2021, suggesting that those who are absent may have worse glycemic control. (2) Multiple studies have consistently demonstrated a correlation between non-attendance and suboptimal glycemic control, reflected in elevated baseline HbA1c levels. (7, 16, 17) The remaining clinical parameters indicate that, on average, these patients have acceptable blood pressure values, but their BMI values are in the overweight range, very close to the lower limit of type 1 obesity. Still, we are unable to attribute the causality of these values to non-attendance at medical appointments, considering that, in Portugal, 82.7% of diabetics have a BMI > 25 kg/m^2. (2) Regarding lipid control values, it would be relevant to stratify patients according to their cardiovascular risk, as this determines the therapeutic target.

Sociodemographic and clinical variables were collected to assess the homogeneity between the effective intervention group and the control group. The results did not reveal statistically significant differences. This is important for two reasons: firstly, it ensures that the patients who responded to the questionnaire do not differ from the control group; secondly, it allows for the evaluation of the intervention's effect on this sample in the future study.

The patients that answered the questionnaire constitute the effective intervention group, which was characterized in greater detail. In comparison to a study characterizing 709 primary care patients with T2DM at the national level, individuals in this group do not exhibit a lower level of academic education, but they appear to have a longer duration of their condition (11.41 vs. 9.25 years). (18) Surprisingly, it was found that 41.8% of these individuals have a household income equal to or less than the national minimum wage, established at the time at €760 gross per month. When analyzing systematic reviews on factors associated with diabetic patients not showing up for appointments, we noticed a lack of consensus regarding the influence of household income. (6, 11, 12) Nevertheless, concerning attendance at medical appointments in general, there is a frequent association between low socioeconomic status and the behavior of not attending. (19) In agreement, Ellis et al. state that the most relevant

factor at the patient-level for predicting the probability of repeated absences from medical appointments continues to be the high level of socioeconomic deprivation. (20) These results highlight the complexity of the phenomenon, indicating that, although the influence of household income on the non-attendance of diabetic patients is uncertain, it still plays a significant role in the attendance of patients in general at medical appointments.

To understand the dimensions of mobility, self-care, and usual activities of these patients, we compared our sample to a study that evaluated the health-related quality of life in 437 patients with T2DM attending six primary healthcare units in the central region of Portugal — the same region where our study was conducted. (21) This study utilized the EQ-5D-3L, revealing a ceiling effect with few individuals positioned at level 3 for these dimensions (I am confined to bed; I am unable to wash or dress myself; I am unable to perform my usual activities). (21) Interestingly, our study did not observe this phenomenon, as it showed significant percentages at level 3. Lower percentages were observed at other levels, particularly at level 1, corresponding to having no problems. This apparent difficulty in mobility, self-care, and usual activities may contribute to non-attendance at T2DM follow-up appointments. Supporting this notion is the fact that 25.5% of participants expressed difficulties in accessing the primary health care unit. In fact, the idea of providing transportation to appointments was the second most mentioned suggestion by participants. Although none of them explicitly pointed to the lack of transportation as the main reason for their absence, it is important to recognize the significance of this issue. As emphasized in a recent systematic review, offering transportation services such as bus passes, taxi vouchers, or reimbursement of transportation costs, in combination with other tailored services, has indicated overall improvements in healthcare utilization and chronic care medical outcomes, especially among elderly patients. (22) Therefore, we underscore the relevance of addressing transportation access barriers as an integral part of strategies to improve adherence to T2DM appointments.

The predominant reason given by the T2DM patients for missing follow-up appointments was forgetfulness, aligning with findings from various studies that consistently emphasize forgetfulness as the predominant reason contributing to nonattendance at medical appointments among these individuals. (23, 24) Notably, some patients themselves proposed the implementation of appointment reminders, highlighting the necessity for proactive strategies to address forgetfulness and enhance overall attendance. The utilization of SMS reminders substantially increases the likelihood of patients attending clinical appointments in comparison to situations where appointment reminders are not utilized. (25) Additionally, a trial revealed that a phone call from a patient care coordinator, conducted one week before a scheduled clinic appointment, for individuals anticipated to be at high risk of not attending, successfully decreased the no-show rate compared to the control group. (26) According to a

systematic review, manual phone calls are more effective in reducing appointment non-attendance compared to automated reminders, including both SMS and automated phone calls. (27) This implies that the personalized and interactive approach of manual phone calls may wield a more substantial influence in motivating individuals to adhere to scheduled appointments.

In this study, we identified that having work commitments was the second most cited reason for not attending T2DM medical appointments. This reason is also commonly referred to in the literature. (6, 11, 23, 24, 28) However, if we consider all cases in which the appointment interfered with other patients' commitments, this would be the most frequent reason. It would include work commitments (n=14), family commitments (n=3), having another medical appointment (n=1), and a patient who waited too long, which led him to leave because he had an upcoming commitment. If we also consider that 18.2% of participants indicated that the appointment time played a negative role in their attendance and that the most common suggestion offered by patients to improve care was reducing waiting time, it becomes evident that the interference of the appointment with other patient commitments is a significant reason for non-attendance. To address these findings and improve T2DM patient attendance, healthcare providers must adopt strategies that accommodate patients' diverse commitments. Implementing flexible scheduling options, such as evening or weekend appointments, can mitigate the clash with work or family obligations. Additionally, fostering patient education regarding the importance of regular medical appointments for the management of T2DM can empower individuals to prioritize their health amidst competing commitments.

During this study, we identified that some patients mentioned being followed-up elsewhere, whether in a hospital or a private clinic, as the reason for missing their appointments. This issue is of crucial importance, since scheduling follow-up appointments for patients who already receive care elsewhere and, therefore, will not attend, represents an unnecessary allocation of resources, without obtaining benefits. In this context, optimizing communication between doctors and patients is imperative to assess the relevance of maintaining these appointments, ensuring the effective management of available resources. Additionally, it would be beneficial if information systems were interconnected to have data indicating that a person has received follow-up care elsewhere. This potential integration of information systems could also enhance overall efficiency and resource utilization.

Although in this study we actively tried to exclude patients living in nursing homes, two individuals, whose clinical records did not include this information, answered the questionnaire. In institutional contexts, such as nursing homes, it is common for follow-up medical appointments to be provided internally, usually by a doctor designated by the institution itself. Therefore, like patients receiving care in other facilities, these cases reinforce the urgency to

improve communication (in this case, with the institutions involved) and integrate/interconnect the information systems for a more efficient management of available resources.

In fact, improving communication between the doctor and the patient, which was also one of the suggestions made, proves to be essential not only for the efficient management of resources but, above all, for enriching the patients' knowledge about their medical condition. This improvement gains additional relevance when we consider that 23.6% of participants were unaware of the need for follow-up appointments for diabetes every 6 months. Additionally, one patient justified his absence from the appointment by considering it unnecessary, claiming to feel good. According to some randomized clinical trials that studied the influence of educational interventions in the form of phone calls on patients with T2DM, a reduction in HbA1C levels, an increase in patient´s knowledge regarding their condition, and greater medication adherence were observed compared to the control group. (29-31) Based on these results, we advocate for the relevance of conducting similar interventions in T2DM patients who miss appointments. We believe that this approach could not only improve communication between the doctor and the patient and the patient's knowledge about T2DM but also, consequently, increase attendance at medical appointments. The potential reduction in HbA1c levels could be even more significant, considering that non-attenders generally have higher initial levels. (7, 16, 17)

The present study has some limitations that should be considered when interpreting and generalizing the results. The primary limitation is the small size of the sample, a condition partly dictated by the adopted methodology. The questionnaire, conducted through telephone interviews, was integrated as part of the future clinical trial intervention. Consequently, its application was restricted to the intervention group to avoid potential influences on the validity of future study results. The future clinical trial should have an appropriate sample size. Using data from a similar study, we employed the calculator available at https://clincalc.com/stats/samplesize.aspx, which, with a power of 80% and an alpha value of 0.05, determined that 47 participants were enough for each group (intervention and control). (30)

Another relevant limitation is associated with selection bias, as only patients who answered the phone call had the opportunity to respond to the questionnaire. This led to the exclusion of non-attending T2DM patients because they did not answer the call. Recognizing this bias, which is common in similar studies, we implemented strategies to mitigate its impact. (23, 24) We collected sociodemographic and clinical data from non-respondents and compared them with those who participated in the questionnaire. The analysis revealed no statistically significant differences between these groups, reinforcing confidence in the representativeness of the included participants. However, it is crucial to acknowledge that the

group of patients who did not answer the phone call represents a pertinent and understudied population. In the future, conducting studies aimed at approaching this population would be valuable.

Additionally, it is important to consider social-desirability bias, as there is a possibility that survey respondents answered questions in a manner that would be viewed favorably by the interviewer. We attempted to minimize this bias by selecting an interviewer not affiliated with any of the primary healthcare units and by assuring participants that their responses would remain confidential.

CONCLUSION

This study aimed to carry out a sociodemographic and clinical characterization of patients with T2DM who miss follow-up appointments. It was observed that these patients have apparently less effective glycemic control, evidenced by an average HbA1c of 7.42%, compared to the general population with diabetes in Portugal.

To evaluate the randomization process for the future clinical trial, it was found that the control group and the effective intervention group are homogeneous in relation to these sociodemographic and clinical variables. Additionally, individuals who could not be contacted did not seem to differ significantly as well.

The predominant reason given by T2DM patients for missing follow-up appointments was forgetfulness, followed by work commitments. A significant proportion of these patients were unaware of the necessity for diabetes follow-up appointments every 6 months. To improve attendance, these patients frequently suggested reducing waiting times and providing transport to the appointments. The next step involves communicating these valuable insights to the primary healthcare units, encouraging a collaborative effort to implement practical improvements. Subsequently, evaluating the attendance rate will provide a comprehensive understanding of the impact of these interventions.

In the future, it would be interesting to conduct studies aiming to increase the attendance of these patients at follow-up appointments. From our perspective, a comprehensive intervention that incorporates appointment reminders, educational initiatives, and addresses practical challenges, such as transportation access barriers, would be a promising strategy to enhance adherence to follow-up appointments and, consequently, disease management.

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ATTACHEMENTS

Attachment I - Approval from the Ethics Committee of the Central Regional Health Administration

GOVERNO DE PORTUGAL
MINISTÉRIO DA SAÚDE

ARSC ADMINISTRAÇÃO REGIONAL DE SAÚDE DO CENTRO, I.P.

COMISSÃO DE ÉTICA PARA A SAÚDE

PARECER FINAL:	DESPACHO:
Parecer favorável.	Hombre 21.12.2023 Dr. Mário Ralvo Vogal Em suplência do Conselho Diretivo, nos termos do art.º 42.º do Código do Procedimento Administrativo

ASSUNTO:	128/2023 - "Pessoas com diabetes sem consultas de seguimento nos cuidados primários: quem são e como as aproximar?"

Esta Comissão de Ética deverá receber cópia do relatório final.

Autor principal/afiliação institucional:

NOME DOS AUTOR(ES): Leonel Santos[1], Ana Nascimento[2*], Cátia Solis[2], Patricia Fragoso[2], Mariana Trindade[3], Bárbara Moreira[4], Lutenio Junior Machado [5]; Cristina Neves[2] Luís Paixão [2***], Inês Rosendo1,[2]

AFILIAÇÃO: 1 – Faculdade de Medicina da Universidade de Coimbra, 2 – USF Coimbra Centro, 3 - USF Coimbra Norte, 4 – USF Caminhos do Cértoma; 5 - Unidade de Saúde Familiar Nautilus; ***Coordenador da Unidade Funcional, instituição ou organização

* Autor principal

ORIENTADO POR (SE APLICÁVEL): Inês Rosendo, Ana Nascimento. Projeto enquadrado no âmbito do Estágio de Intervenção do Internato Médico de Medicina Geral e Familiar e em Tese de Mestrado Integrado de Medicina;

Objetivos:
- Caracterizar sociodemograficamente e clinicamente os utentes com diabetes que não comparecem às consultas de seguimento e, consequentemente, não estão a ser adequadamente seguidos.
- Questionar telefonicamente uma amostra sobre os motivos de não comparência ou seguimento nos cuidados primários e possíveis sugestões de melhoria de acessibilidade a implementar.

- Perceber o impacto do telefonema feito com posterior comparação entre o grupo a quem foi feito o telefonema vs o grupo que não foi sujeito a intervenção.

Material e métodos. O presente documento vem por este meio solicitar autorização para um estudo em 3 fases: 1) estudo descritivo da população com diabetes tipo 2 que não foi seguida em consultas em cuidados primários no último ano; 2) estudo qualitativo telefónico em amostra aleatória destes utentes sobre razões de não seguimento em consultas no Centro de Saúde 3) estudo do impacto do telefonema na população de pessoas com diabetes que não comparece a consulta de seguimento de diabetes, com comparação das variáveis de controlo da doença e frequência de consultas antes e depois da chamada telefónica, em ambos os grupos de intervenção e controlo.

População do projeto: Pessoas com diabetes que não compareceram a nenhuma consulta de seguimento da sua patologia nos cuidados de saúde primários nos últimos 12 meses, aquando da colheita de dados inicial.

Critérios de inclusão (o utente terá que verificar todos os critérios):

- Diagnóstico de diabetes tipo 2
- Sem seguimento da sua patologia nos cuidados de saúde primários (pelo menos 1 consulta por ano no último ano)
- Inscrito numa das USFs aderentes (USF Coimbra Centro; USF Coimbra Norte; USF Caminhos do Cértoma)

Recrutamento da amostra: A lista de utentes recrutados será feita através da identificação de doentes não cumpridores em cada uma das USFs, através da plataforma informática MIM@UF.

Os doentes com diabetes e não cumpridores serão listados de acordo com a USF a que pertencem. Assim sendo existirão 3 listas, cada uma alocada individualmente a um investigador responsável que não seja da mesma USF, diminuindo o risco do conhecimento do utente interfirir na recolha de informação.

A alocação a cada um dos grupos (com ou sem entrevista telefónica) será feita através de geração da sequência de alocação (números aleatórios gerados por computador através da plataforma *Sealed envelope*). Como *outcome* primário iremos considerar o controlo metabólico e cardiovascular da diabetes (HbA1c, TA, LDL, fumador (sim/não)), como *outcome* secundário consideraremos a qualidade de vida (SF-36) e frequência de consultas em cuidados primários.

COMISSÃO DE ÉTICA PARA A SAÚDE

Caso se verifique, em algum momento, que o utente não é elegível para a participação no projeto e/ou o utente não pretenda participar no mesmo, serão prestados todos os cuidados de saúde habituais ao nível dos cuidados de saúde primários pelo seu médico de família. Das recusas de participação serão recolhidos os dados socio-demográficos para perceber se existe diferença em relação aos que aceitam participar.

Intervenção: Entrevista telefónica segundo modelo presente em anexo (apêndice 1).

Caso o utente pretenda agendamento posterior da consulta serão dadas indicações de como proceder no final da entrevista. No caso de o utente possuir seguimento em outro local, facultar-se-á a possibilidade de pedir essas informações e o envio de análises que tenha feito no último ano.

Avaliação: Colheita de dados sociodemográficos e de controlo metabólico colhidos no ficheiro clínico dos utentes complementados em entrevista telefónica, usando os últimos antes da intervenção e reavaliados 6 meses depois da mesma.

Cronograma:

Inicialmente iremos identificar utentes diabéticos não utilizadores de uma ou duas consultas anuais de diabetes.

A intervenção através de contactos telefónicos terá início em 01-11-2023 por um período de 3 meses. A colheita dos dados após a intervenção será feita 12 meses depois.

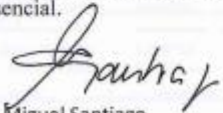3.5 - Expetativa de resultados (máximo de 200 palavras):
Espera-se conhecer melhor as características dos utentes com o diagnóstico de diabetes que não possuem adequado seguimento da sua patologia, bem como melhorar os níveis de adesão e comparência às consultas de seguimento.
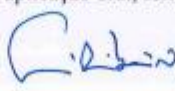
É do nosso interesse ainda que deste estudo aumente o controlo e a qualidade de vida dos utentes com diabetes.

Concordância das instituições em que se realizará o trabalho:

Existe das várias USF que entram neste trabalho.

Termo de consentimento informado: Existe para aplicação oral, sendo assinado aquando da consulta presencial.

Luiz Miguel Santiago
Relator

Carlos Fontes Ribeiro
Presidente da Comissão de Ética

Attachment II – Authorizations from the Coordinators of the Primary Healthcare Units

Declaração de Concordância

Eu, LUÍS MIGUEL AZEREDO LOPES DE MOURA PAIXÃO, coordenador da Unidade de Saúde Familiar de Coimbra Centro autorizo a realização nesta unidade do projeto de investigação intitulado "Pessoas com diabetes sem consulta de seguimento nos cuidados de saúde primários: quem são e como os aproximar?", desde que aprovado pela comissão de ética.

Coimbra, 02 de outubro de 2023

_____
(coordenador)

Declaração de Concordância

Eu, _____,

coordenador da Unidade de Saúde Familiar de Coimbra Norte autorizo a realização de projeto de investigação nesta unidade desde que aprovado pela comissão de ética.

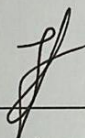_____ USF Cb-Nte ____ 24 ____ de outubro de 2023

_____
(coordenador)

Declaração de Concordância

Eu, _____Isa Garcia_____,

coordenador da Unidade de Saúde Familiar Nautilus autorizo a realização de projeto

de investigação nesta unidade desde que aprovado pela comissão de ética.

Figueira da foz, _____26_____ de ~~junho~~ outubro de 2023

_____

(coordenador)

Declaração de Concordância

Eu, _____Ema Bastardo Massa_____, coordenadora

da Unidade de Saúde Familiar de Caminhos do Cértoma, autorizo a realização de projeto

de investigação nesta unidade desde que aprovado pela Comissão de Ética.

_____Pampilhosa____, ____2____ de outubro de 2023

_____Ema Bastardo Nasa_____

(coordenadora)

USF CAMINHOS DO CÉRTOMA
ACeS do Baixo Mondego
ARS Centro, I.P.

Non-attenders at Type 2 Diabetes Follow-up Appointments: Who Are They and What Are Their Reasons?

Dados Sociodemográficos

1. Idade (anos)

   _____

2. Sexo

   ( ) Masculino
   ( ) Feminino

3. Estado civil

   ( ) Casado
   ( ) Solteiro
   ( ) Viúvo
   ( ) Divorciado

4. Número de anos de escolaridade

   _____

5. Situação profissional

◯ Empregado

◯ Desempregado

◯ Reformado

◯ Reformado por invalidez

6. Renda familiar

◯ Superior ao salário mínimo nacional

◯ Igual ao salário mínimo nacional

◯ Inferior ao salário mínimo nacional

Estado de Saúde

7. Mobilidade

◯ Não tenho problemas em andar

◯ Tenho alguns problemas em andar

◯ Tenho de estar na cama

8. Cuidados Pessoais

◯ Não tenho problemas em cuidar de mim

◯ Tenho alguns problemas a lavar-me ou vestir-me

◯ Sou incapaz de me lavar ou vestir sozinho/a

9. Atividades habituais

   ( ) Não tenho problemas em desempenhar as minhas atividades habituais

   ( ) Tenho alguns problemas em desempenhar as minhas atividades habituais

   ( ) Sou incapaz de desempenhar as minhas atividades habituais

Dados Clínicos *(mais recentes)*

10. Duração da Diabetes (anos)

_____

11. HbA1c (%)

_____

12. Colesterol Total (mg/dL)

_____

13. Colesterol LDL (mg/dL)

_____

14. Colesterol HDL (mg/dL)

_____

15. Triglicerídeos (mg/dL)

_____

16. Peso (Kg)

_____

17. Altura (m)

_____

18. Pressão arterial sistólica

_____

19. Pressão arterial diastólica

_____

Investigação da não comparência à Consulta de Seguimento

20. Tem conhecimento da necessidade de realizar consultas de 6 em 6 meses para seguimento da diabetes?

◯ Sim
◯ Não

21. Porque razão não veio à consulta de seguimento no Centro de Saúde?

◯ Esquecimento
◯ Incompatibilidade com o trabalho
◯ Compromissos familiares
◯ Outra: _____

22. Acha que é difícil aceder ao Centro de Saúde?

◯ Sim
◯ Não

23. O horário de consultas é motivo para não vir ao Centro de Saúde?

◯ Sim
◯ Não

24. Na sua opinião, o que poderia ser melhorado, no Centro de saúde, para que viesse às consultas de seguimento de diabetes?

_____

_____