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Perspectives of Patients and Healthcare Professionals About the Main Concerns and Impacts of Type 2 Diabetes – A Mixed Methods Approach

Perspetivas dos Doentes e dos Profissionais de Saúde Sobre as Principais Preocupações e Impactos da Diabetes Tipo 2 – Uma Abordagem de Métodos Mistos

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Abstract

Introduction: There is a significant lack of evidence on the convergence of perspectives among people with Type 2 Diabetes (T2D) and healthcare professionals (HCPs).
Objective: We aimed to evaluate the level of divergence of perspectives between people with T2D and HCPs.
Material and Methods: A mixed-methods study was performed to assess the existence of differences in perceptions between people with T2D and HCPs. The qualitative phase identified main concerns, the most valued healthcare factors, and the disease's impact on daily life. Subsequently, a questionnaire was administered to both groups to assess divergent perspectives.
Results: After conducting focus group techniques and group interviews, 464 individuals with T2D and 181 HCPs were assessed. HCPs reported a more negative perspective on social impact, family life, work, mental health, and body perception compared to people with T2D. Concerns diverged between the two groups across global dimensions. HCPs considered that people with T2D expressed greater concern than what the patients themselves reported, except for mental health, complications, and autonomy/functionality, where T2D patients reported higher concern.
Conclusions: This study highlights significant differences in perspectives between individuals with T2D and HCPs. Understanding these divergences is crucial for developing a more patient-centric approach to managing T2D.

Keywords: type 2 diabetes; perspectives; impacts; concerns; patient-centered management

Resumo

Introdução: Existe uma significativa falta de evidência sobre a convergência de perspetivas entre pessoas com Diabetes Tipo 2 (DT2) e profissionais de saúde (PS).
Objetivo: Pretendemos avaliar o nível de divergência de perspetivas entre pessoas com DT2 e PS.

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Materiais e Métodos: Foi realizado um estudo de métodos mistos para avaliar a existência de diferenças nas perceções entre pessoas com DT2 e PS. A fase qualitativa identificou as principais preocupações, os fatores de saúde mais valorizados e o impacto da doença na vida diária. Subsequentemente, foi administrado um questionário a ambos os grupos para avaliar a divergência de perspetivas.
Resultados: Após a realização de técnicas de grupo focal e entrevistas de grupo, foram avaliados 464 indivíduos com DT2 e 181 PS. Os PS relataram uma perspetiva mais negativa sobre o impacto social, vida familiar, trabalho, saúde mental e perceção corporal em comparação com as pessoas com DT2.As preocupações divergiram entre os dois grupos em várias dimensões globais. Os PS consideraram que as pessoas com DT2 expressaram maior preocupação do que aquilo que os próprios pacientes relataram, exceto para a saúde mental, complicações e autonomia/funcionalidade, onde os pacientes com DT2 relataram maior preocupação.
Conclusões: Este estudo destaca diferenças significativas nas perspetivas entre indivíduos com DT2 e PS. Compreender estas divergências é crucial para desenvolver uma abordagem mais centrada no paciente para a gestão da DT2.

Palavras-chave: diabetes tipo 2; perspetivas; impactos; preocupações; gestão centrada no paciente

> INTRODUCTION

The perspectives of patients and physicians regarding the impact, main concerns and priorities for clinical care frequently differ. [1] This divergence is particularly detrimental in chronic diseases, as adherence to treatment and follow-up critically depend on patients' beliefs and individual priorities. [2]
Type 2 Diabetes (T2D) is a highly prevalent disease affecting more than 500 million people globally. [3] Its clinical complexity demands multiple diagnostic and therapeutic interventions that may preclude healthcare professionals (HCPs) from focusing their clinical interactions on the patients' individual priorities. However, given the chronic character of T2D, as well as the need for multiple lifestyle modifications and the adequate adherence for treatment success, the person with T2D must have a central role in the management of the disease. As such, patients' priorities must be integrated by the healthcare system during routine care. [4]
Notably, there is a significant lack of evidence on the convergence of disease perspectives and treatment priorities among people with T2D and healthcare professionals (HCPs). A significant divergence among these perspectives and priorities may reduce healthcare quality and hamper the relationship established between the HCPs and the person with T2D, which can also negatively impact patient outcomes.
Our aim was to evaluate the divergence of perspectives between people with T2D and HCPs regarding the impact of disease in daily life, the main concerns, and the most valued factors in healthcare for people with T2D.

> MATERIAL AND METHODS

Study Design

The CONCORDIA T2D project is a mixed-methods study developed to assess whether perceptions of people with T2D regarding the impact of the disease on their daily life, their main concerns and their most valued factors differ from how HCPs perceive the patient perspective.
This research employs a sequential exploratory mixed-methods design, involving two distinct yet complementary phases conducted sequentially. Initially, a qualitative phase incorporating focus groups and a group interview was implemented, followed by a subsequent quantitative phase utilizing a survey. The study was reviewed and approved by the ethics committee of Portuguese Diabetes Association (APDP) (Ofício nr 154/2020, de 24 de Agosto 2020).

Qualitative Approach

The qualitative approach of the study serves as a preliminary phase for the development of the questionnaire. Its main purpose was to identify items to construct a questionnaire that is closer to reality. The three themes discussed in the conducted sessions constitute the areas of the study's questionnaire. In this way, to perform a mixed methods design, the two approaches (qualitative and quantitative) are inseparable.
At this stage of the study, we conducted a total of 5 focus groups and 1 group interview. The composition of the focus groups was as follows: (1) physicians, including general practitioners, endocrinologists, nephrologists, and ophthalmologists (7 participants); (2) nurses (6 participants); (3) individuals diagnosed with Type 2 Diabetes (T2D) for at least 1 year without complications (6 participants); (4) individuals diagnosed with T2D for at least 1 year with minor complications (5 participants); and (5) individuals diagnosed with T2D for at least 1 year with major complications (6 participants) (Table I). To ensure a comprehensive qualitative analysis and incorporate the viewpoints of individuals diagnosed with T2D for less than 1 year (a stage of disease evolution that is unstable and highly complex), we conducted a group interview involving 2 participants. Through this method, it

Table I - Inclusion criteria for minor and major complications.

People with T2D, with more than 1 year of evolution, with minor complications:	People with T2D, with more than 1 year of evolution, with major complications:
With Glomerular Filtration Rate between 45 and 60 (MDRD) and patients with retinographies classified as R1	Followed in Nephrology, and/or undergoing Laser treatments (Laser left eye (LE) and right eye (RE)) and/or intravitreal injections in Ophthalmology.

was possible to obtain an individual perspective from each participant regarding their first year of illness.
Participants were selected in accordance with a strategy aimed at maximizing diversity in their characteristics and perspectives.
People with T2D and HCPs were recruited from APDP outpatient clinic. The APDP outpatient clinic is a specialized center in Lisbon (Portugal) dedicated to the management of people with diabetes, employing a multidisciplinary approach. APDP includes a diverse population of people with T2D as well as different groups of HCPs, making this center particularly well-suited for the qualitative phase of the study.
The focus group and group interview sessions were conducted in November 2020, following a pre-established script composed of open-ended questions. This approach was employed to facilitate a comprehensive yet structured discussion. The script questions addressed the objectives of the study: the concerns, the most valued factors in health care, and the impacts on the daily life of people with T2D. As a result of COVID-19 pandemic related restrictions, 4 focus groups and a group interview were performed remotely, using Zoom Video Communications Inc., 2020. The focus groups with nurses were conducted in person at the APDP facilities, due to the coordination of schedules and availability of participants. The physical space where the session took place ensured acoustic conditions that enabled proper recording of the content.
Participation was strictly voluntary, and the confidentiality of the registered contents was guaranteed.
Contents of the focus groups were analyzed and discussed in a grouped manner to promote similar data interpretation. [5]
The analysis entailed identifying items from the scripted questions directed at various participant groups. Throughout the sessions, the moderators identified items related to concerns, impacts, and factors mentioned by participants in response to the scripted questions. After sessions, the moderators took time to deliberate on the ideas and information collected. Their aim was to ensure that no significant information obtained during those sessions was overlooked or disregarded.
Researchers identified and grouped items into dimensions (related items) and categorized them into the respective areas: impacts, concerns, and factors. This process of discussion and grouping was used for the formation of the final questionnaire.

Quantitative Approach

Based on the results of the qualitative phase of the study, we constructed a matrix of dimensions to guide the development of a questionnaire aimed at quantitatively assessing the concerns, impacts and factors valued in health care by people with T2D. The questionnaire consisted of 3 parts: 1 - impact of T2D on daily life; 2 - main concerns; 3 - most valued factors in health care. The questionnaire was applied to persons with T2D and HCPs. HCPs were asked to answer the questionnaire according to their beliefs regarding the perception of patients, and not their own point-of-view. A semantic differential scale of 3-points was used in part 1 and a semantic differential scale of 4-points was used in parts 2 and 3. In each question, options "I never thought about it" or "I prefer not to answer / not applicable" were available, and both were considered as missing data for the analysis based on the differential scale. All respondents also answered questions aimed at characterizing their sociodemographic background and their health or professional practice status as applicable (for patients and HCPs, respectively).
The questionnaire was built on a Microsoft Forms® platform (Microsoft Office 365) and disseminated through newsletters, shared via social media platforms, and promoted at professional congresses and conferences. The questionnaires were answered between 27th April 2021 and 31st December 2021.
For participation in the study, individuals with T2D were required to meet the following criteria: be at least 18 years of age, provide written informed consent for study participation, and have a confirmed diagnosis of T2D.
Simultaneously, HCPs were eligible to initiate the questionnaire and participate in the study if they met the following criteria: provided written informed consent for study participation and were involved in the care or management of individuals with Type 2 Diabetes *Mellitus*.
Respondents were informed about the context and objectives of the study and were asked to voluntarily consent to participation (only by expressly selecting the consent option were respondents allowed access to sur-

vey questions). Respondents were also informed that the study was anonymous and that study results could be used for scientific publication purposes only.

Statistical Analysis

The results of the questionnaire on the impact of disease on daily life, main concerns and most valued factors in health care were converted into scores between 0 and 10 (0 meaning positive impact, not concerned and not important, respectively; and 10 meaning negative impact, very concerned and very important, respectively). The score was used to provide a value enabling comparison between perspectives across each of the areas/dimensions. This was obtained using the following formula: "(mean – mV) / ΔV x MV" (where mean is the average score of the responses provided by all respondents within each dimension; mV represents the minimum possible value of the mean; ΔV the difference of possible values for the calculation of the mean; and MV the maximum value for the new metric – defined as 10). [6]
In addition, to measure the reliability of the variables used and to enable their scores to be used as a comparative measure, as well as providing an overall view of the dimension, Cronbach's alpha was calculated. Although these scores cannot be extrapolated to other studies, they can be found in Table II.
Comparison between groups were performed using the Mann-Whitney U-test. The convergence or divergence of perspectives between people with T2D and HCPs was assessed using the chi-square test. Convergence was defined as no statistically significant difference and divergence as a statistically significant difference between the two groups. A two-sided P-value < 0.05 was considered statistically significant. Continuous variables are described as mean ± standard deviation and categorical variables as proportions (percentages).

> RESULTS

Qualitative Approach

Based on the findings from the qualitative phase of our study, the items referred to by the study participants were categorized into three distinct areas: impact of the disease on the daily life of the person with T2D, main concerns of people with T2D, and most valued factors by people with T2D in clinical care and the health care system.
Regarding the impact of the disease on the daily life of the person with T2D, 7 dimensions of impact were identified: social life, family life, employment, mental health, body perception, physical well-being, and quality of life. Regarding the main concerns of people with T2D, 9 dimensions were identified: personal and family life, stigma and discrimination, mental health, changes in lifestyle, treatment of T2D, monetary costs, the disease itself, the complications of T2D, and autonomy and functionality. In each of these dimensions several distinct items of concern were identified and incorporated (Figure 1). The dimensions and items are the constituents of the questionnaire. Figure 1, thus, provides a map of the concerns´ area, illustrating how the questionnaire is structured. This rationale is repeated for the other areas: impacts and factors.
Tables III, IV and V presents descriptions and illustrative quotations representing each dimension of the different areas: impacts, concerns, and factors, respectively
Regarding the most valued factors by people with T2D in clinical care and the health care system, 2 dimensions were identified: factors valued in the appointments and factors valued in healthcare delivery. Each dimension included several distinct items.

Quantitative Approach

Respondents' Characterization

Of the 687 people with T2D and 250 HCPs that responded to the questionaries, 464 people with T2D and 181 HCPs met the inclusion criteria and were included in the present analysis (Table VI). People with T2D had a mean (± SD) age of 62.4 ± 10.2 years and 49.1% were women. Forty-eight percent had college education or higher. Sixty-nine percent had a T2D diagnosis for more than 6 years. In the HCPs group, 69% were physicians and 89% had a medical specialty: 35.5% general and family care practitioners, 19.1% endocrinologists, 19.1% nephrologists and 17.3% internal medicine. Thirty-seven percent of physicians had more than 20 years of experience in caring for people with T2D, mainly at hospital level (54.4%).

Impact of T2D on Daily Life

Most analyzed dimensions were found to be divergent between people with T2D and HCPs (Figure 2). Our results show that the dimension of "social impact" displayed the most significant divergence in perspectives between the individuals with T2D and HCPs (78% of HCPs *vs*. 31.5% of people with T2D reporting a negative

Table II - Reliability of dimensions comprising a questionnaire about the impact of Type 2 Diabetes in daily life, the main concerns, and the most valued factors in health care.

Dimensions	Cathegories	N	Items	Cronbach's Alpha
Impacts on daily life	People with T2D	275	7	0,836
	HCPs	164		0,795
	Total	439		0,846
Concerns of HCPs	People with T2D	29	48	0,930
	HCPs	113		0,940
	Total	142		0,934
Changes in lifestyle	People with T2D	179	5	0,607
	HCPs	170		0,816
	Total	349		0,701
Personal and family life	People with T2D	62	9	0,868
	HCPs	144		0,835
	Total	206		0,844
Stigma and discrimination	People with T2D	317	2	0,425
	HCPs	168		0,547
	Total	485		0,498
Mental health	People with T2D	413	2	0,812
	HCPs	167		0,756
	Total	580		0,795
Treatment of T2D	People with T2D	229	6	0,717
	HCPs	165		0,762
	Total	394		0,725
Monetary costs	People with T2D	394	3	0,861
	HCPs	172		0,723
	Total	566		0,833
The disease itself	People with T2D	406	7	0,839
	HCPs	173		0,677
	Total	579		0,805
Complications of T2D	People with T2D	333	11	0,933
	HCPs	165		0,833
	Total	498		0,917
Autonomy and functionality	People with T2D	352	3	0,858
	HCPs	164		0,877
	Total	516		0,867
Factors valued by HCPs	People with T2D	411	20	0,952
	HCPs	169		0,945
	Total	580		0,951
Appointments	People with T2D	427	15	0,952
	HCPs	172		0,946
	Total	599		0,950
Healthcare delivery	People with T2D	436	5	0,829
	HCPs	175		0,763
	Total	611		0,814

Reliability was measured using the Cronbach's Alpha statistical test. HCPs: Healthcare professionals. T2D: Diabetes type 2.

impact). HCPs also reported a more negative perspective on the impact on family life, employment, mental health, and body perception. Only the dimension "impact on quality of life" was found not to be divergent between T2D and HCPs. Furthermore, a higher score (more negative perception) among HCPs was observed in all dimensions except in the dimension "impact on quality of life" (Figure 2).

Concerns of People with T2D

Our findings show that, when analyzed by global score, the perceptions of individuals with T2D and HCPs significantly diverged across all dimensions related with the concerns of individuals with T2D (Table VII). For most of these dimensions, HCPs considered that people with T2D are more concerned than what is directly reported by this group. Notably, the level of concern reported by people with T2D was higher than what was reported by HCPs in three dimensions: mental health (score 6.40 ± 2.93 *vs*. 5.58 ± 2.50, $p < 0.001$), complications of T2D (score 7.52 ± 2.17 *vs*. 7.35 ± 1.65, $p = 0.013$), and autonomy and functionality (score 7.49 ± 2.52 *vs*. 6.77 ± 2.57, $p < 0.001$). The dimension exhibiting the highest level of concern for both individuals with T2D, and HCPs was the dimension "complications of T2D". Inversely the dimension showing the lowest level of concern for both groups was "stigma and discrimination" (3.18 ± 2.53 *vs*. 5.18 ± 2.43, $p < 0.001$). Regarding the individual items included in each dimension, people with T2D manifested a greater level of concern in questions related to pain, autonomy, and functionality. Notably, HCPs observed a discrepancy in the perceived concerns of individuals with T2D. Specifically, HCPs noted that individuals with T2D appeared to show more apprehension regarding hypoglycemia and the use of injectable treatments. However, this divergence was not evident in their perspectives on concerns related to starting insulin treatment or insulin dependence, where both groups exhibited similar (Table VIII).

Factors Valued by People with T2D Regarding Appointments and Healthcare Delivery

The most valued factors related with health appointments from the perspective of people with T2D were, in order of importance: (1) clear information related to the disease; (2) sharing up-to-date information on treatments and technologies; (3) clear and sincere speech; (4) respect and (5) clarification of doubts (Table VII). From

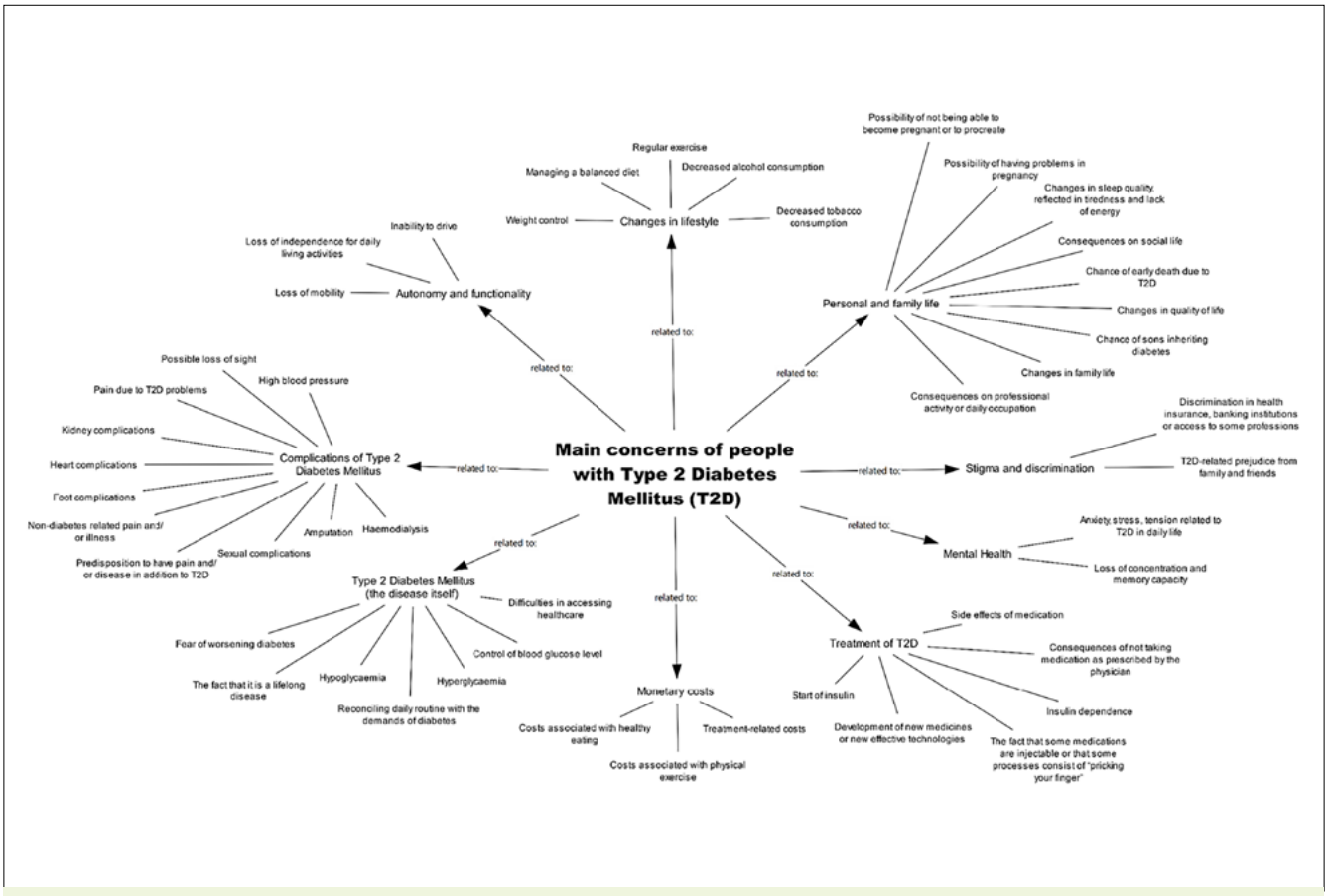

Figure 1 - Thematic map of the 9 dimensions regarding concerns of people with T2D, including associated items. Illustration of the various dimensions of concerns among individuals with Type 2 Diabetes and the specific items associated with each dimension. The dimensions and identified items are the constituents of the questionnaire. This image provides a map of the concerns´ area, illustrating how the questionnaire is structured.

the perspective of HCPs, the factors estimated to be most valued by people with T2D were: (1) clarification of doubts; (2) relationship of trust; (3) respect; (4) empathy and understanding and (5) clear and sincere speech (Table 4). Regarding the most valued factors related with healthcare delivery, both perspectives converged on the factor: "specialized and multidisciplinary diabetes appointments" (Table IX). It is important to highlight that, despite their different hierarchical positions across groups (the higher the score, the greater the importance level of each factor), the absolute weight of each factor was always higher in people with T2D compared with HCPs, as can be seen in table IX.

> DISCUSSION

Our mixed-methods study found a high degree of divergence between what people with T2D directly report and what HCPs believe is the perception of people with T2D regarding the disease impact on daily life, the main concerns and the most valued factors related with T2D.

Few previous studies have evaluated and compared the perspectives of people with T2D and how HCPs perceive these perspectives. In a study of 250 people with T2D and their practice nurse, Woodcock *et al*. [7] observed that nurse perceptions of the main concerns of patients were different from those of the patients themselves. This study was limited to people in the first year of disease and focused only on concerns. Sanz-Nogués C *et al*. [8] evaluated the perceptions and concerns of people living with T2D and type 1 diabetes and found that the most recognized complications were retinopathy, amputations and nephropathy. However, this study did not compare the perspective of the people with diabetes with the perception of HCPs.

Given the lack of evidence on the degree of divergence between the perspectives of people with T2D and HCPs, this study is an important contribution to this field. A

Table III - Description and illustrative quotes from each dimension of impacts.

Impact of the disease on daily life	
7 dimensions	**Illustrate quotes of participants**
1. Social life **Description:** This dimension refers to the impact that diabetes has on people's social life, whether in their relationships with friends, their friends' opinions, or meetings for lunch or dinner.	**Original quote:** "Acho que há por exemplo na simples socialização, nas pessoas que vão almoçaradas e etc. Têm sempre receio, do que é que os outros vão pensar, "se eu comer um bolo, sabem que eu sou diabético", " se eu beber um copo de whisky sabem que eu sou diabético ", portanto têm medo de ser reprimidos. (...) [Interrupção M: acham que as pessoas se isolam?] ... não, acho que é daqueles momentos que eles podem fingir que desvalorizam a diabetes, por causa, ou seja, eles podem estar preocupados, mas naquele momento não se mostram preocupados, e se for preciso não picam o dedo e não dão injeção de insulina que deviam que dar etc, para não reforçar a ideia que eu sou diabético , e depois os outros verem e vão me recriminar pelo o que eu estou a fazer (...) Portanto de vez em quando falam disso e há pessoas que " ah mas eu quando vou jantar fora..." que as vezes começam com as hipoglicémias, as pessoas querem dar logo a insulina antes de chegarem ao jantar para não verem dar, e é daqueles truques que nós dizemos sempre" não, nunca!" (...)" *(Profissional de saúde)* **Translated quote:** "I think there is, for example, in simple social gatherings, in people who go out for meals and etc. They always fear what others will think, 'if I eat a cake, they'll know I'm diabetic,' 'if I have a glass of whisky, they'll know I'm diabetic,' so they are afraid of being reproached. [...] [Interruption M1: Do you think people isolate themselves?] ... no, I think those are moments when they can pretend to devalue diabetes, I mean, they may be worried, but in that moment, they don't show it, and if necessary, they don't prick their finger or give themselves the insulin injection they should, etc., to avoid reinforcing the idea that I'm diabetic, and then others see it and criticize me for what I'm doing. So, occasionally, they talk about it, and there are people who say, 'oh, but when I go out to dinner...' sometimes they start having hypoglycemia, people want to give themselves insulin before they get to dinner, so others don't see it, and it's one of those tricks we always say 'no, never!' [...]" *(Healthcare Professional)*
2. Family life **Description:** This dimension concerns the impacts that diabetes has on people's family life, whether in the family's opinion, changes in eating habits, support for personal needs, or family constitution.	**Original quote:** "(...) portanto a toma dos fármacos e depois se nós falarmos também das pessoas idosas, de que têm um cuidador, nós vamos interferir não só na vida da pessoa que tem diabetes, mas também na vida dos cuidadores, muitas vezes, temos que conciliar com a família, quem é que está disponível para administrar insulina, quem é quem está disponível para colaborar na autovigilância... na vigilância da pessoa com diabetes, está disponível para a.... dar semanalmente dar algum fármaco. " *(Profissional de saúde)* **Translated quote:** "(...) so taking medications and then if we also talk about elderly people, who have a caregiver, we are going to interfere not only in the life of the person with diabetes but also in the lives of the caregivers. Often, we have to coordinate with the family, who is available to administer insulin, who is available to collaborate in self-monitoring... in monitoring the person with diabetes, who is available to... give some medication weekly." *(Healthcare Professional)*
3. Employment **Description:** This dimension concerns the impacts that diabetes has on people's professional lives, such as in work schedules, or the materials they use.	**Original quote:** "Eu felizmente já saí do que estava a fazer, que era tinha um café, e uma das coisas que me acontecia era quando andei com essas feridas nos pés, andar num café um dia inteiro em cima de uma ferida era por vezes doloroso não é, mas pronto. " *(Pessoa com DM2_mais de 1 evolução_com complicações major)* **Translated quote:** "I fortunately already left what I was doing, which was having a café, and one of the things that happened to me was when I had those sores on my feet, walking in a café all day on top of a wound was sometimes painful, isn't it, but well." *(Person with Type 2 Diabetes (T2D) _over 1 year of progression_with major complications)*
4. Mental Health **Description:** This dimension refers to the impacts that diabetes has on people's mental health, for example, anxiety, stress, tension, and self-confidence.	**Original quote:** "Acho que deviam de ter, esse cuidado, como a Z diz, porque isto afeta-nos muito psicologicamente, muito [enfâse] e acho que não têm a noção do quanto (...)" *(Pessoa com DM2_mais de 1 evolução_sem complicações)* **Translated quote:** "I think they should have that care, as Z says, because this affects us a lot psychologically, a lot [emphasis], and I think they don't realize how much..." *(Person with T2D_more than 1 year of evolution_without complications)*

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Impact of the disease on daily life	
7 dimensions	**Illustrate quotes of participants**
5. Body perception **Description:** This dimension refers to the impacts that diabetes has on the body, for example, on body image, weight, and body changes.	**Original quote:** "Há um impacto que é o impacto na... na imagem que a pessoa tem de si própria do seu corpo (...) é um mundo de nuances do impacto da diabetes em cada pessoa, não é? A imagem que tem do corpo, da sua saúde, do seu conceito de saúde, etc. " *(Profissional de saúde)* **Translated quote:** "There is an impact, which is the impact on... on the image that the person has of themselves and their body (...) it's a world of nuances of the impact of diabetes on each person, isn't it? The image they have of their body, their health, their concept of health, etc." *(Healthcare Professional)*
6. Physical well-being **Description:** This dimension refers to the impacts that diabetes has on overall health, on physical well-being, for example, on eyes, feet, kidneys, heart, pain.	**Original quote:** "(...) então tinha uma retinopatia monstra. O que é que aconteceu? Já fiz 10 operações à vista, 5 em cada olho, desde os raio-lasers desde sei lá, tenho duas lentes, vejo mais ou menos (...)" *(Pessoa com DM2_mais de 1 evolução_com complicações major)* **Translated quote:** "(...) so I had a monstrous retinopathy. What happened? I've already had 10 eye surgeries, 5 in each eye, from laser treatments, I don't know, I have two lenses, I see more or less (...)" *(Person with T2D_more than 1 year of evolution_with major complications)*
7. Quality of life **Description:** This dimension refers to the impact that diabetes has on quality of life, for example, on sleep quality, lifestyle, management of daily routines, fatigue, autonomy.	**Original quote:** " (...) e o facto de ter que levantar para ir à casa de banho 4 ou 5 vezes à noite , o que que eu faço, eu tento... depois das 6/7 da noite já não beber mais água ou o mínimo possível , mas eu não consigo porque fico com a boca muito seca e eu também não consigo dormir por causa disso, então automaticamente eu vou beber, e se eu vou beber tenho que ir à casa de banho, então o facto de ter que acordar várias vezes durante a noite, eu fico o dia inteiro com sono, cansado, com dor em tudo o quanto é lugar." *(Pessoa com DM2_mais de 1 evolução_sem complicações)* **Translated quote:** "(...) and the fact that I have to get up to go to the bathroom 4 or 5 times at night, what do I do, I try... after 6/7 in the evening, I don't drink water anymore or as little as possible, but I can't because my mouth gets very dry, and I can't sleep because of that, so automatically I'll drink, and if I drink, I have to go to the bathroom, so the fact of having to wake up several times during the night, I spend the whole day sleepy, tired, with pain everywhere." *(Person with T2D_more than 1 year of evolution_without complications)*
Presentation of the quotes that represent each dimension of impacts.	

sequential approach with an initial qualitative phase allowed us to compose a questionnaire centered on people living with T2D, which reflected their reported reality. Furthermore, the use of focal groups allowed us to gather a broader and more comprehensive perspective on the concerns of people with T2D than would be possible by literature analysis.

Our qualitative approach identified 7 dimensions of impact, 9 dimensions of main concerns and 2 dimensions of factors most valued in clinical care and health care system. The identification of these dimensions was essential to allow the preparation of the questionnaire that allowed to evaluate the degree of divergence between the perspectives of people with T2D and HCPs for each individual dimension. Despite the high level of concern among both people with T2D and HCPs for most items, there was a high divergence between groups. Of note, there were dimensions where no significant divergence was observed between people with T2D and HCPs. Regarding the impact of T2D, people with T2D and HCPs had no significant divergence on the "impact on quality of life of T2D". Despite significantly different between groups, "stigma and discrimination" was the dimension of concerns showing the lowest level of concern for both groups. On the most valued factors related with health appointments, despite not agreeing on the order of importance, both people with T2D and HCPs had in their top-5 factors the "respect" and "clear and sincere speech". Furthermore, people with T2D and HCPs converged on the most important factors related to appointment, which was "have specialized diabetes and multidisciplinary appointments". These topics of

Table IV - Description and illustrative quotes from each dimension of concerns.

Main concerns of people with T2D	
9 dimensions	**Illustrate quotes of participants**
1. Personal and family life **Description:** This dimension addresses an individual's personal and family concerns, such as changes in family dynamics, social life, and consequences for professional activity or daily occupation. It also encompasses considerations regarding quality of life: the implications of Type 2 Diabetes Mellitus (T2D) on life and mortality. Additionally, it covers issues related to reproduction, pregnancy difficulties, and diabetes transmission.	**Original quote:** "(...) está-me a preocupar bastante porque, lá está já passou 1 ano, eu já fiz 40 anos, cada vez será uma gravidez de maior risco, não é? E depois é o impacto que a gente leva de nos dizer que: uma mulher normal pode o feto pode vir com deficiência, uma mulher diabética ainda tem, ainda mais probabilidade de sofrer esse tipo de situação e isso assusta-me (...)" *(Pessoa com Diabetes Mellitus Tipo 2 (DM2) _mais de 1 evolução_sem complicações)* **Translated quote:** "(...) It's been worrying me quite a bit because, you know, it's already been a year, I'm now 40 years old, and each time will be a higher-risk pregnancy, right? And then there's the impact of being told that: a normal woman, the fetus might come with a deficiency, and a diabetic woman has even more probability of facing this kind of situation, and that scares me (...)" *(Person with Type 2 Diabetes Mellitus (T2D) over 1 year of progression_without complications)*
2. Stigma and discrimination **Description:** This dimension is related to the stigma and discrimination associated with the disease, including specific concerns such as prejudices from friends and family, as well as issues related to discrimination in various contexts, such as health insurance, banking institutions, and access to certain professions.	**Original quote:** "(...) ou então de evitarem serem discriminados por terem diabetes, serem alvo de comentários em termos familiares há muito uma posição, ou é frequente uma posição que é as pessoas com diabetes são um bocadinho o alvo dos outros, têm que ser exemplares na maneira de comer, oiço como muita frequência nas consultas que as pessoas com diabetes são apontadas como: não podendo fazer isto ... não podendo de fazer aquilo... pelos outros, pelos familiares. Quando os familiares até se comportam muitas vezes, da maneira menos adequada em relação à alimentação. E penso que há determinadas... é frequente haver pessoa que preferem não...como é que eu hei de dizer, não serem identificadas como pessoas com diabetes para não ser discriminadas no ponto de vista alimentar, em convívios, em refeições fora de casa etc." *(Profissional de saúde)* **Translated quote:** "(...) or else to avoid being discriminated against for having diabetes, being the subject of comments in family terms has long been a position, or it is often a position that people with diabetes are a bit of a target for others, they have to be exemplary in the way they eat. I often hear in consultations that people with diabetes are pointed out as: not being able to do this... not being able to do that... by others, by family members. When family members often behave, in terms of diet, in a less than appropriate way. And I think that there are certain... it is common for people to prefer not... how shall I say, not to be identified as people with diabetes to avoid discrimination in terms of eating, in social gatherings, in meals outside the home, etc." *(Healthcare Professional)*
3. Mental health **Description:** This dimension addresses concerns related to mental health, where specific worries have been identified, such as loss of concentration and memory, anxiety, stress, and tension associated with the disease in their daily lives.	**Original quote:** "(...) com o avançar da doença, e já falando de doentes insulinatratados, há esse receio , e esse tem impacto muito significativo no dia a dia, portanto esse medo da hipoglicémia e o planear o dia a dia para não ter uma hipoglicémia , e há afeção cognitiva, afeção que isto depois leva à saúde mental, o risco de demência que também está inerente, tenho pacientes que manifestam isto... têm medo de ... porque estão a perder a memória (...) e portanto isto também é uma preocupação e também é algo que tem bastante impacto no dia a dia." *(Profissional de saúde)* **Translated quote:** "(...) with the progression of the disease, and now talking about insulin-treated patients, there is this fear, and it has a very significant impact on daily life. So, this fear of hypoglycemia and planning the day to avoid hypoglycemia, and there's cognitive impairment, an effect that then leads to mental health, the risk of dementia that is also inherent. I have patients who express this... they are afraid of... because they are losing their memory (...) and so, this is also a concern and something that has quite an impact on daily life." *(Healthcare Professional)*
4. Changes in lifestyle **Description:** This dimension addresses issues related to lifestyle changes, including concerns about diet, weight, alcohol consumption, smoking, and physical exercise.	**Original quote:** "Eu posso dar a minha opinião, eu acho que muitas pessoas... o que se preocupam é ... com a mudança radical de vida, eram pessoas que comiam doces e têm que deixar de comer doces... ahh que têm de ter depois a sua autovigilância, e, portanto, ficam muito preocupadas porque vão mudar de vida assim de um momento para outro... (...) " *(Profissional de saúde)* **Translated quote:** "I can give my opinion; I think that many people... what they worry about is... the radical change in life. They were people who used to eat sweets and now have to stop eating sweets... oh, they have to have self-monitoring afterward. So, they become very concerned because they are going to change their life from one moment to another... (...)" *(Healthcare Professional)*

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Main concerns of people with T2D	
9 dimensions	**Illustrate quotes of participants**
5. Treatment of T2D **Description:** Treatment represents a dimension of concerns for individuals, encompassing various issues. These include the side effects of treatments, the consequences of not adhering to prescribed medication, the need for injectable therapies or finger pricks, concerns about the initiation and dependence on insulin. Additionally, the development of new medications and effective technologies is also a focus of attention for individuals.	**Original quote:** "É a medicação, eu tremo de medo de cada vez que eu vou ao médico, vou ser sincera... às vezes falto..., mas ele liga-me de volta [risos] eu morro de medo... morro de medo ... pronto é que a medicação é tão pesada, mas depois também tenho medo de levar aquelas picas da insulina, eu acho que é a insulina. [M: insulina] Eu penso Ó meu Deus, senão vou morrer da doença, vou morrer da cura." *(Pessoa com DM2_mais de 1 evolução_sem complicações)* **Translated quote:** "It's the medication, I tremble with fear every time I go to the doctor, I'll be honest... sometimes I skip... but he calls me back [laughs] I'm terrified... I'm terrified... well, the medication is so heavy, but then I'm also afraid of taking those insulin injections, I think it's the insulin. [M1: insulin[1]] I think, oh my God, if I'm not going to die from the disease, I'll die from the cure." *(Person with Type 2 Diabetes Mellitus (T2D) _over 1 year of progression_without complications)* [1] PT: Fala do Moderador. EN: Moderator's speech.
6. Monetary costs **Description:** This dimension is related to concerns regarding monetary costs, which have been identified as a source of worry, including expenses associated with healthy eating, physical exercise, and treatments.	**Original quote:** "Estava a falar da atividade física, muitas vezes as pessoas vêm com aquela preocupação de não ter tempo, nem dinheiro para irem a um ginásio. E então arrumam o assunto porque," não posso, não tenho tempo" (...)" *(Profissional de saúde)* **Translated quote:** "I was talking about physical activity; often, people come with that concern of not having time or money to go to a gym. So, they dismiss the matter because, 'I can't, I don't have time' (...)" *(Healthcare Professional)*
7. The disease itself **Description:** This dimension encompasses concerns related to T2D itself and its management, addressing both general and specific issues. This includes challenges such as balancing diabetes with daily routines, accessing healthcare, and controlling blood sugar levels, as well as concerns regarding hypoglycemia and hyperglycemia. Additionally, broader concerns such as it being a lifelong condition and the fear of worsening the disease are also addressed.	**Original quote:** "(...) e nós passamos uma vida a tomar medicamentos e nunca ficamos curados, portanto podemos atenuar, não é? Um pouco as nossas dores ou..., mas nunca curar, essa palavra de o curar [enfâse] um diabético não existe (...)" *(Pessoa com DM2_mais de 1 evolução_sem complicações)* **Translated quote:** "(...) and we spend a lifetime taking medications and never get cured, so we can alleviate, right? A little our pains or..., but never cure, that word 'to cure' [emphasis] doesn't exist for a diabetic (...)" *(Person with Type 2 Diabetes Mellitus (T2D) _over 1 year of progression_without complications)*
8. The complications of Type 2 Diabetes Mellitus (T2D) **Description:** There is a variety of concerns that make up this dimension, including sexual complications, issues with the feet, kidneys, and heart, pain, loss of vision, and high blood pressure. Additionally, the predisposition to pain and/or other diseases, as well as pain and/or diseases not related to T2D, are areas of focus. Concerns about amputations and hemodialysis have also been identified.	**Original quote:** "(...) temos do nosso lado, infelizmente, o medo da diálise, que é assim um papão e um bicho que os doentes têm (...)" *(Profissional de saúde)* **Translated quote:** "(...) we have on our side, unfortunately, the fear of dialysis, which is like a bogeyman and a monster that patients have (...)" *(Healthcare Professional)*

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Main concerns of people with T2D	
9 dimensions	**Illustrate quotes of participants**
9. Autonomy and functionality **Description:** Concerns related to autonomy and functionality in the person's daily life have been identified, reflecting worries such as the loss of independence to perform daily activities, the inability to drive, and loss of mobility.	**Original quote:** "(...) A vista para mim é um problema grave, eu adoro conduzir e sei que hoje já não sou o mesmo do que era a conduzir, principalmente por causa da vista esquerda, não tem nada a ver." *(Pessoa com DM2_mais de 1 evolução_com complicações major)* **Translated quote:** "(...) My vision is a serious problem for me. I love driving, and I know that today I'm not the same as I used to be when driving, mainly because of the left eye, it's not the same at all." *(Person with Type 2 Diabetes Mellitus (T2D) _over 1 year of progression_with major complications)*
Presentation of the quotes that represent each dimension of concerns.	

Table V - Description and illustrative quotes from each dimension of factors valued in healthcare.

Most valued factors by people with T2D in clinical care and the health care system	
2 dimensions	**Illustrate quotes of participants**
1. Appointments **Description:** This dimension addresses a variety of factors valued during consultations with healthcare professionals, including the quality of interaction and communication between the healthcare professional and the individual, as well as the provision of holistic care that encompasses various dimensions of the individual's health.	**Original quote:** "Aquilo que eu considero, de facto, fundamental, é uma abordagem do doente de forma holística, portanto, um doente nunca é doente de uma doença, é doente de uma série de patologias, umas mais, ou menos acentuadas, outras muito discretas, certamente. Mas se nós no papel de doente, estivermos à frente de um clínico que tem todo o nosso histórico, a confiança, que, no meu caso, eu tenho é muito maior. " *(Pessoa com DM2_mais de 1 evolução_com complicações major*) **Translated quote:** "What I consider, indeed, fundamental is a holistic approach to the patient. Therefore, a patient is never sick with just one condition; they have various pathologies, some more or less pronounced, others very discreet, certainly. But if we, as patients, are in front of a clinician who has our entire medical history, the trust, which in my case I have, is much greater." *(Person with Type 2 Diabetes Mellitus (T2D) _over 1 year of progression_with major complications)*
2. Healthcare delivery **Description:** This dimension addresses a variety of factors valued in the provision of healthcare, particularly in healthcare units. These factors reflect issues related to organizational and administrative accessibility, as well as access to T2D specialized and multidisciplinary appointments, and organized healthcare services. Additionally, the appreciation of initiatives focused on individuals with T2D has also been identified.	**Original quote:** "Portanto se nós no serviço nacional de saúde, pudéssemos ter, enfim, esta abordagem global das patologias, portanto para cada caso, quer dizer porque acontece com frequência a pessoa vai porque se queixa da tensão alta e sai de lá com uma medicação que afeta a vista, se houver esse enquadramento global do doente, certamente que esses cuidados são tidos em conta, e portanto eu considero fundamental, que o doente seja visto por uma equipa multidisciplinar, perfeitamente coordenada, porque só assim se consegue os melhores resultados." *(Pessoa com DM2_mais de 1 evolução_com complicações major)* **Translated quote:** "So, if we in the national health service could have, well, this comprehensive approach to pathologies, so for each case, I mean, because it often happens that a person goes because they complain of high blood pressure and leaves with medication that affects their vision, if there is this overall framework for the patient, certainly, these considerations are taken into account. Therefore, I consider it fundamental that the patient be seen by a perfectly coordinated multidisciplinary team, because only then can the best results be achieved." *(Person with Type 2 Diabetes Mellitus (T2D) _over 1 year of progression_with major complications)*
Presentation of the quotes that represent each dimension of factors valued in healthcare.	

Table VI - Characteristics of participants in the quantitative phase.

1A. People with T2D				
Characteristics	**Category**		**Mean ± SD**	
Age			62.4 ± 10.2	
		N	**n**	**%**
Gender	Male	464	236	50.9
	Female		228	49.1
Education level	9th grade	458	91	19.9
	12th grade		148	32.3
	University education		219	47.8
Occupation	Working full-time or part-time	456	209	45.8
	Retired		216	47.4
	Other		31	6.8
Duration of T2D diagnosis	Less than 1 year	463	39	8.4
	1 to 5 years		105	22.7
	6 to 10 years		114	24.6
	11 to 20 years		128	27.6
	More than 20 years		77	16.6
History of complications of T2D	1	231	115	49.8
	2		69	29.9
	3 or more		47	20.4
Group of complications of T2D	Sexual dysfunction	413	127	55.0
	Eye complications		98	42.4
	Vascular or nerve complications		63	27.3
	Heart complications		57	24.7
	Kidney complications, without hemodialysis		52	22.5
	Kidney complications, with hemodialysis		2	0.9
	Vascular complications with amputation		4	1.7
	Other		10	4.3
Types of treatment for T2D	Non-insulin drug treatment	907	430	93.5
	Insulin		119	25.9
	Non-pharmacological treatment		358	77.8
Regular follow-up of T2D				
Frequency of T2D appointments	Every month	411	9	2.2
	Every 3 months		113	27.5
	Every 6 months		241	58.6
	Every year		48	11.7

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1B. Healthcare professionals				
Characteristics	**Category**		**Mean ± SD**	
Age			44.2 ± 12.0	
		N	**n**	**%**
Gender	Male	181	65	35.9
	Female		116	64.1
Profession	Physician	181	124	68.9
	Nurse		56	31.3
Medical formation	In-training physician (resident)	185	9	7.3
	Physician with specialty		110	89.4
	Physician without specialty		4	3.3
Medical specialty	General and family care	110	39	35.5
	Endocrinology		21	19.1
	Nephrology		21	19.1
	Internal Medicine		19	17.3
	Others		10	9.1
Years of professional practice	5 years or less	181	31	17.1
	6 to 10 years		30	16.6
	11 to 20 years		42	23.2
	More than 20 years		78	43.1
Years of practice following people with T2D	5 years or less	181	36	19.9
	6 to 10 years		28	15.5
	11 to 20 years		50	27.6
	More than 20 years		67	37.0
Healthcare setting where follows people with T2D	Primary care	180	61	33.9
	Hospital care		98	54.4
	Diabetes-specialized care		13	7.2
	Other		8	4.4

Descriptive statistics of the study population: A: Characteristics of people with T2D. B: Characteristics of healthcare professionals. * Before COVID-19 pandemic. T2D: type 2 diabetes

convergence are important, as those can provide a foundation for subsequent studies aimed at narrowing the gap between the two groups in areas where significant divergence exists.

The items with particularly high degree of divergence between people with T2D and HCPs were concerns related to mental health, pain, hypoglycemia, and use of injectable drugs.

Previous studies have shown that awareness of HCPs for mental health disease and the priority given to mental health in clinical appointments is insufficient. [9] People with T2D are at increased risk for depression, anxiety disorder, and eating disorder diagnoses. [10] Our findings support the need for an increased awareness about the relevance of mental health in T2D management.

Pain was also a concern that was more valued by people with T2D than HCPs. While several complications of T2D are painless, people with T2D may experience pain related to lower foot complications, neuropathy and comorbidities of diabetes. [11] Furthermore, people with

T2D are at higher risk for chronic pain than individuals without diabetes. [12] The identification of a lower concern regarding pain by people with T2D as estimated by HCPs is relevant given the previous absence of data on this topic. Furthermore, several studies have shown that frequently HCPs undervalue pain reported by patients [13] and frequently do not prescribe adequate treatments for pain. [14] Chronic pain is also associated with a lower quality of life, in general and for T2D individuals. [5-18] Another important finding is that HCPs perceived that

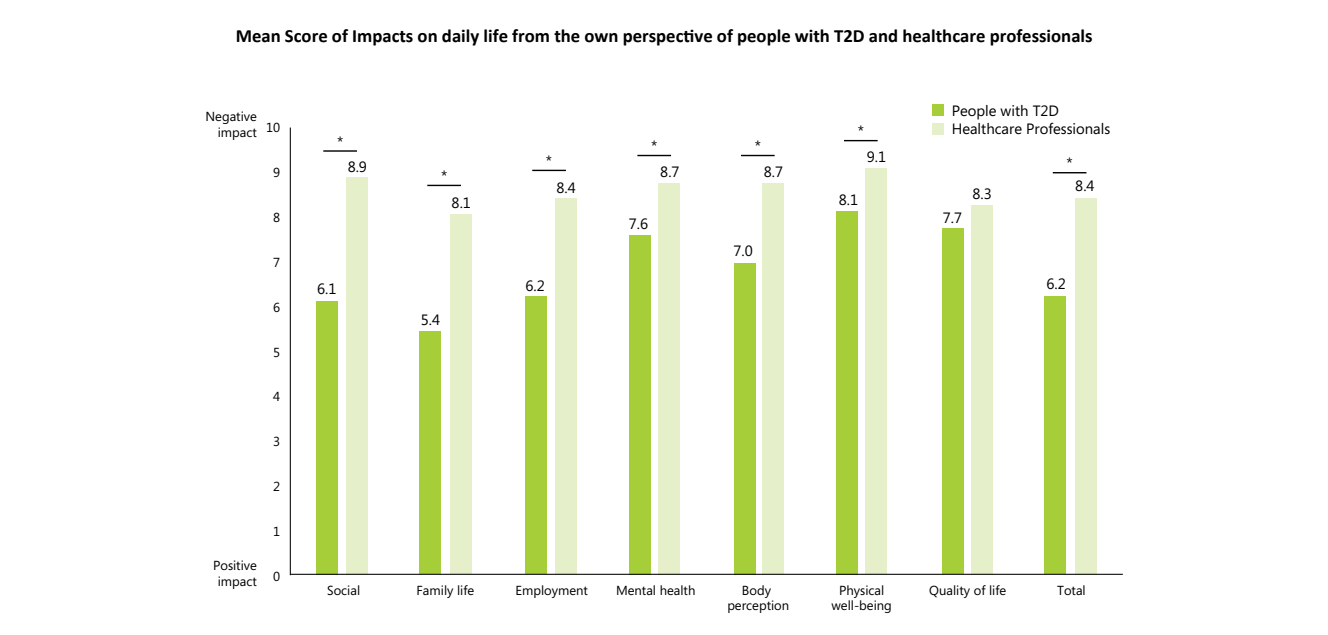

Figure 2 - Mean Score of Impacts on daily life from the own perspective of people with TD2 and HCPs. Mean scores indicating the perceived impacts on daily life across various dimensions, including social, family life, employment, mental health, body perception, physical well-being, and quality of life, as reported by both individuals with T2D and HCP. All p-values < 0.001 for comparison of people with T2D vs HCP, except in quality of life (p = 0.076). HCPs: Healthcare professionals. T2D: Diabetes type 2. * P-value < 0.001. Footnote: The Mann-Whitney statistical test was used to identify the p-value.

Table VII - Concerns of people with T2D (perspective of people with T2D and HCPs).

Dimensions – score (mean ± SD)	People with T2D	HCPs	P-value
Changes in lifestyle	4.73 ± 1.67	6.17 ± 2.03	<0.001
Personal and family life	3.96 ± 2.00	6.00 ± 1.92	<0.001
Stigma and discrimination	3.18 ± 2.53	5.18 ± 2.43	<0.001
Mental health	6.40 ± 2.93	5.58 ± 2.50	<0.001
Treatment of T2D	5.08 ± 2.43	6.37 ± 2.04	<0.001
Monetary costs	4.85 ± 2.81	5.36 ± 2.20	0.023
The disease itself	6.60 ± 2.08	7.21 ± 1.45	0.002
Complications of T2D	7.52 ± 2.17	7.35 ± 1.65	0.013
Autonomy and functionality	7.49 ± 2.52	6.77 ± 2.57	<0.001
Global score	5.63 ± 1.69	6.47 ± 1.42	<0.001

Scores of the concerns of people with T2D, regarding several dimensions, including, changes in lifestyle, personal and family life, stigma and discrimination, mental health, treatment of T2D, monetary costs, the disease itself, complications of t2d, autonomy and functionality, as reported by individuals with T2D and HCPs. HCPs: Healthcare professionals. T2D: Diabetes type 2. Footnote: The Mann-Whitney statistical test was used to identify the p-value.

people with T2D have a greater level of concern for hypoglycemia than what is reported directly by the people with T2D. Despite the fact that hypoglycemia is one of the main barriers for treatment of T2D [19] and that there are descriptions of people with diabetes with a great level of anxiety related to hypoglycemic events, [20] this may not be the case for the whole population of individuals with T2D.

Interestingly, despite the lack of convergence on the concern for injectable drugs, there was a convergence on a high concern for starting insulin treatment. Nonetheless, while HCPs may perceive that the barrier to start insulin therapy is the injectable administration of this medication, this may not be the main factor. [21] Previous studies have reported that the fear of disease worsening after starting insulin treatment, the perception that insulin is an end-of-line treatment, and the perception of failure to control the disease, may be more relevant for the resistance of patients to start insulin treatment than its injectable administration. [22-24]

Table VIII - Items of concern Treatment of T2D (perspective of people with T2D and HCPs).

Treatment of T2D	Categories	People with T2D		HCPs		P-value
		N	n (%)	N	n (%)	
Side effects of medication	Not concerned	435	29 (6,7%)	179	5 (2,8%)	0,224
	Slightly concerned		88 (20,2%)		54 (30,2%)	
	Concerned		215 (49,4%)		84 (46,9%)	
	Very concerned		103 (23,7%)		36 (20,1%)	
Consequences of not taking medication as prescribed by the physician	Not concerned	389	50 (12,9%)	179	7 (3,9%)	0,507
	Slightly concerned		61 (15,7%)		46 (25,7%)	
	Concerned		165 (42,4%)		87 (48,6%)	
	Very concerned		113 (29,0%)		39 (21,8%)	
The fact that some medications are injectable or that some processes consist of "pricking your finger"	Not concerned	417	140 (33,6%)	179	11 (6,1%)	<0,001
	Slightly concerned		112 (26,9%)		46 (25,7%)	
	Concerned		98 (23,5%)		60 (33,5%)	
	Very concerned		67 (16,1%)		62 (34,6%)	
Insulin dependence	Not concerned	343	39 (11,4%)	180	10 (5,6%)	0,401
	Slightly concerned		39 (11,4%)		43 (23,9%)	
	Concerned		90 (26,2%)		42 (23,3%)	
	Very concerned		175 (51,0%)		85 (47,2%)	
Start of insulin	Not concerned	337	41 (12,2%)	180	12 (6,7%)	0,999
	Slightly concerned		40 (11,9%)		34 (18,9%)	
	Concerned		86 (25,5%)		45 (25,0%)	
	Very concerned		170 (50,4%)		89 (49,4%)	
Development of new medicines or new effective technologies	Not concerned	393	68 (17,3%)	170	19 (11,2%)	0,066
	Slightly concerned		60 (15,3%)		45 (26,5%)	
	Concerned		158 (40,2%)		81 (47,6%)	
	Very concerned		107 (27,2%)		25 (14,7%)	

Frequencies of the level of concern about the treatment of T2D, regarding the side effects of medication, consequences of not taking medication as prescribed by the physician, the fact that some medications are injectable or that some processes consist of "pricking your finger", insulin dependence, start of insulin, and development of new medicines or new effective technologies, from the perspective of individuals with T2D and HCP. HCPs: Healthcare professionals. T2D: Diabetes type 2. Footnote: The Mann-Whitney statistical test was used to identify the p-value.

Table IX - Factors valued by people with T2D regarding appointments and healthcare delivery (perspective of people with T2D and HCPs).

Factor (ordered from highest to the lowest score of people with T2D)	People with T2D Score	HCPs Score
Clear information related to your disease	9.03	8.07
Sharing of up-to-date information about medicines and technologies	8.93	7.64
Clear and sincere speeches	8.77	8.30
Respect	8.74	8.43
Clarification of your doubts	8.72	8.66
Relationship of trust	8.70	8.55
Empathy and understanding	8.61	8.40
Cooperation and shared decision making	8.50	7.93
A personalized approach	8.41	8.13
Motivation strategies	8.21	7.87
Availability of time	8.21	8.07
Concern about your anxieties and/or emotions	8.08	7.68
Active listening to your concerns and sharing of expectations	8.04	7.72
Informal conversation	8.02	6.70
Psychological support and sharing of the "most difficult" information in the right way	7.84	7.49
Have specialized diabetes and multidisciplinary appointments	9.09	8.46
Have a good welcome and be organized	8.73	7.99
Be close and accessible	8.70	8.16
Have initiatives focused on people with diabetes	8.06	7.02
Provide support for administrative problems arising from their disease	7.99	7.73

Priority-ranked scores of factors valued by individuals with T2D, as reported by both people with T2D and HCPs during appointments and healthcare delivery. HCPs: Healthcare professionals. T2D: Diabetes type 2

Regarding the factors most valued in health appointments, the priorities of people with T2D reflect a preference for person-centered care with more patient information and more capacity for patients to decide. [25, 26] These results highlight the need for HCPs to adapt their practice to focus more on a person-centered care with shared-decision making. [27-29]

The reasons for the observed divergence between people with T2D and HCPs are probably multifactorial. Historic perspectives of a "paternalistic approach" [30] to clinical care may preclude physicians from adopting patient-centered approaches. In turn, this may diminish HCP´s perception of the real concerns, priority and valued factors by people with T2D. Improving the communication between HCPs and persons with T2D may be central to increase convergence of perspectives [31] and should be a focus of intervention, as a clear information related to the disease, and sharing up-to-date information on treatments and technologies are the two most valued factors related with health appointments by persons with T2D. Person-centred care, shared decision--making and health literacy promotion interventions can - for one hand, enable patients to have a better understanding of their disease and consequences, and to use information and services in ways that promote and maintain good health and well-being, - and on the other, enable HCP to have a deeper understanding of the real needs and concerns of people with T2DM.

Further studies are needed to a deeper understanding of the main priorities of people with T2D by the HCPs, and should explore other variables that can influence the results, as health literacy levels of persons with T2D, perceived access to healthcare, perceived quality of life, and present comorbidities.

Limitations

The online application of the questionnaire to people with T2D and to HCPs may introduce a bias by reducing the participation of people with lower digital literacy. Given the observational nature of our study, we cannot assume causality of the observed associations. Furthermore, our results may not be generalizable to people with T2D and HCPs in other contexts.

> CONCLUSIONS

This mixed-methods analysis is one of the first studies to assess and identify a high degree of divergence between the perspectives of people with T2D regarding the impact of T2D on their daily life, their main concerns and their most valued factors in health care and the same factors as estimated by HCPs. Additional research is needed to understand the causes of this divergence and to improve the convergence of concerns and priorities between people with T2D and HCPs, leading to a more patient-centric approach. <

Conflicts of interest/*Conflitos de interesses*
ARP, JVC, FGA, BR, and ASC acknowledge the support of the NOVA National School of Public Health Research Grant: CONCORDIA|932157|2021 and report no specific competing interests relevant to the submitted research. JSN and JFR received no specific funding for this work and report no competing interests relevant to the submitted research. HM, JC, FB, and MP are employees of AstraZeneca, and report no other specific competing interests relevant to the research presented in this article. HM, JC, FB, and MP have in place an approved plan for managing potential conflicts of interest arising from their involvement in scientific research./*ARP, JVC, FGA, BR e ASC reconhecem o apoio da Bolsa de Investigação da Escola Nacional de Saúde Pública da NOVA: CONCORDIA|932157|2021 e não reportam quaisquer interesses concorrentes específicos relevantes para a investigação submetida. JSN e JFR não receberam financiamento específico para este trabalho e não reportam interesses conflituantes relevantes para a investigação apresentada. HM, JC, FB e MP são colaboradores da AstraZeneca e não reportam outros interesses concorrentes específicos relevantes para a investigação apresentada neste artigo. HM, JC, FB e MP têm em vigor um plano aprovado para gerir potenciais conflitos de interesses decorrentes do seu envolvimento em investigação científica.*

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