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Managing One's Health with Type 2 Diabetes

The Findings of the "Diab-Quali" Qualitative Research

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How do people affected by type 2 diabetes manage their health as the disease evolves, depending on their social situation and the resources they possess? Interviews were held between 2020 and 2022 with 84 people having this disease in five French regions (Auvergne-Rhône-Alpes, Bretagne, Île-de-France, Provence-Alpes-Côte-d'Azur, and Île de La Réunion) in a restricted context due to the COVID-19 epidemic. These people, with various profiles, declared for the most part that they followed the course of treatment recommended for their health. The rationale behind their health actions is linked mainly to their health literacy and to their differentiated relationships with food, physical activities, treatment, and disease monitoring. The importance of social support, access to patient education, and the quality of their relations with health care professionals was also observed. By highlighting what facilitates or, in contrast, renders health management in accordance with medical recommendations more difficult, this research provides avenues for public authorities and health care workers to better organise their support in response to the various needs of people who have diabetes.

A chronic disease emblematic of the issues related to the epidemiological transition and social inequalities in health care, diabetes affects more than 3.5 million people in France (Fosse Edorh et al., 2022). Most of these people have type 2 diabetes, which is linked to a deficiency in the activity of insulin (insulin resistance) and/or the secretion of insulin by endocrine cells. The initial results of the "ENTRED 3" (a national representative sample of people with diabetes) epidemiological survey (see Inset context) highlight that, compared with the two previous studies from 2001 and 2007, the age of the population living with type 2 diabetes shifted from 65 in 2007 to 67 in 2019, after a period of stability between 2001 and 2007. Moreover, the median length of the diabetes duration (eleven years) increased by two years between 2007 and 2019, while it was stable between 2001 and 2007. Furthermore, the socioeconomic level of people living with type 2 diabetes has evolved, with a progression in educational level, which is most likely associated with a generational effect. The survey highlighted the absence of progress in controlling the factors that encourage the onset of complications associated with the disease, such as weight (80% of people with type 2 diabetes were overweight or obese in 2019) and a small decrease in smoking (from 14% to 13% between 2007 and 2019) [Fosse-Edorh et al., 2022].

For persons with type 2 diabetes, medical recommendations associate a balanced diet with regular physical activity, daily medication, and medical supervision. This daily management is based on a set of cognitive skills (reading, writing, and calculating) and social skills (communicating) people use, both to access

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the information and services required to make decisions concerning their health and to understand, retain, use and assess them (Osborne et al., 2013; Kickbusch et al., 2013). These skills are related to the level of health literacy, which affects an individual's health condition and has an impact on the creation of health disparities (Sørensen et al., 2012). The main research on this subject shows that people with "higher" levels of health literacy develop skills that enable them to critically research, read, interpret, and understand health messages, treatment options, and the advice of health care professionals (Lambert et al., 2014). In addition to the cognitive and social skills required to make decisions related to their health, various characteristics are associated with a low level of health literacy, such as age the person's mother tongue (other than that spoken in the country), educational level, and socioeconomic level

METHOD

Collected data

Semi-structured interviews were conducted between 2020 and 2022 with 84 persons with type 2 diabetes living in four regions of mainland France (20 persons in Bretagne, 10 persons in Ile-de-France, 16 persons in Auvergne Rhône-Alpes, and 14 persons in Provence-Alpes-Côte d'Azur) and on the Île de La Réunion (24 persons). They were among the 4,984 persons (2,270 of whom were in overseas *départements* and regions and 586 in La Réunion) who responded to the "Entred 3" survey (Fosse-Edorh et al., 2023). In each region, the *Santé Publique France* "ENTRED 3" survey pilot team provided the interviewers with a list of people who agreed to be contacted for complementary surveys. This list contained certain aggregated information, which was declared in the survey via a questionnaire, which was used to contact people with varied profiles in terms of their social characteristics (age, gender, educational level, employment status, perceived social support, declared financial comfort, lifestyle, and living conditions) and resources provided by the health care system (sources of health information, care offer, and perceived quality of the relationship with health care professionals). The aim was not to establish a representative panel of people living with type 2 diabetes but rather to diversify the profiles likely to be associated with varied health management practices. These persons received a letter in the post in which the survey was presented and were subsequently contacted by telephone to arrange a meeting for an interview lasting approximately two hours.

How the survey was conducted

Owing to the COVID-19 epidemic and the uncertainties about its evolution, 44 interviews were carried out by telephone, and 40 interviews were conducted at the people's homes by three interviewers (Delphine Ballet, Maryvette Balcou-Debussche, and Jessica Caroupin). With the agreement of the participants, the interviews were recorded and entirely written down. Anonymity was guaranteed, and each person was given an alias.

The interviewed persons

The persons generally had socially privileged profiles (51 persons said they were "financially comfortable"), and most of them reported that their disease was well monitored (77 persons). Among the 84 participants, half were women (43 people), and the average age ranged from 55 to 75 years. Two-thirds lived as a couple, without children and in a house. Additionally, most of them lived in urban areas with more than 6,000 inhabitants. Most of them were retired, with an educational level that did not go beyond secondary school. One-third of the participants said that they had financial difficulties. Most of the persons had been diagnosed with type 2 diabetes for more than ten years and were taking anti-diabetic oral treatments (OADs) and controlled (for 54 persons who responded to the question about the control of blood sugar levels) their own blood sugar levels one to six times per day. One out of two persons consulted their GP every three months to renew their prescription and sometimes to measure their glycated haemoglobin (this reflects the average glucose levels in the blood over the past three months). Half of the participants had never consulted a diabetologist.

Analysis

The construction of the interview guide and the analysis were based on the concept of health literacy, a polysemic and multidimensional concept related to the comprehension and analysis of language, information, concepts, and representations of the world in situations involving interaction and communication. While various tools and types of quantitative and qualitative analysis, developed in different contexts, make it possible to identify and characterise the skills of people in the field of health literacy (Nutbeam, 2008; Osborne et al., 2013), francophone studies carried out by M. Balcou-Debussche (2016a) highlighted eight variables involved in the management of diabetes in an ordinary context, grouped into three categories:

- Disease management: diet, physical activity, treatment and monitoring of the disease
- Health knowledge: access to information and knowledge about the disease
- Expertise, networks, and social support: relations with health care professionals and social support

On the basis of the categories established by Don Nutbeam (2008) in health literacy, three types of relationships with the disease were determined according to three categories and eight variables (Balcou-Debussche, 2016):

- An "instrumental/functional" relationship: the disease is generally externalised by the affected person, and the latter follows the advice given by the reference health care professional(s). The tasks are generally carried out without a critical approach and are performed in an identical and/or repetitive way in everyday situations.
- An "interactive" relationship: the person is aware that he or she can have an impact on the disease and make a commitment to be proactive, occasionally or in a more lasting way, about certain elements that help them manage the disease on a day-to-day basis. The person then deploys cognitive and social skills to adapt certain practices to changing situations, relating to the evolution of the disease and/or new environments.
- A "critical" relationship in which the management of the disease is more active and extensive, in interaction with his or her environment, however complex and fluctuating. The person subsequently deploys cognitive and social skills that enable him or her to develop strategies adapted to changes and unforeseen events that occur in the disease itself or in the person's frame of reference (Balcou-Debussche, 2016).

Hence, the differentiated relationships with various aspects of diabetes management refer to a person's ability to implement appropriate practices to maintain good health, understand the reasons behind it, and adapt them by considering their needs and resources provided by the health care system.

The coding of the interviews was carried out by two researchers who cross-referenced their analyses to identify the relations of the people with type 2 diabetes to the management of the disease around the four abovementioned dimensions while seeking to understand what helped them to make decisions that matched the recommendations or, on the contrary, made the management of their health more difficult. Individual accounts were drawn up for each of the interviewed persons (see Insets on Pages 4, 5, and 6) before a comparative analysis of the studied aspects was carried out. For each person, the results were different and not always based on the same variables.

(Rootman, 2008). In the framework of diabetes, health literacy influences decisions related to the management of diet, physical activity, and glucose control (Laranjo et al., 2015). While a satisfactory level of health literacy goes hand in hand with maintaining good health (Baker et al., 2007), literacy remains a fluctuating and multidimensional skill, which may increase or decrease over time. Consequently, when one focuses on health literacy, an in-depth analysis of the approach adopted by a population and its health practices appears to be pertinent (Balcou-Debussche, 2016).

In a changing social environment and a health care system affected by many transformations (epidemiological, therapeutic, the availability of educational resources, new technologies, etc.), whose effects on the quality of care provided to persons with chronic conditions are unknown or are ambivalent, it is important to better understand people's experience with the disease and its treatment: what do they think facilitates or, on the contrary, renders their management of diabetes more difficult, and what resources do they use?

The "Diab-quali" research was based on a qualitative method, using interviews with persons with diabetes living in five French regions (see Inset Method). The profiles of these people were diverse in terms of personal characteristics (age, sex, educational level, employment status, perceived social support, reported financial situation, lifestyle, and living conditions) and resources linked to the health care system (sources of health information, health care supply, and perceived quality of the relationship with health professionals). However, owing to the method used to recruit participants, who were already respondents to the "ENTRED" survey and who agreed to be recontacted, the sample was exceptional because most of those surveyed reported that their disease was supervised in accordance with medical recommendations. The interviews were based on the data collection grid *"Diabète, littératie, santé"* ("Diabetes, literacy, and health", Balcou-Debussche, 2016), which identified four dimensions that constitute the management of the disease, without any hierarchy: food, physical activity, care management, and monitoring of the disease.

The aim of the study was to analyse the variations in people's "relationships" with the four dimensions of disease management, which enabled an assessment of their health literacy (see Inset Method). These "relationships" identified the cognitive and socioaffective relationships that the persons had with their disease, with others, and with their life situation. Depending on this relationship and the type of relationships expressed through three approaches – ranging from the simple application of recommendations ("functional") to the ability to adapt these recommendations ("interactive") or even develop a critical approach that enables them to actively manage the disease ("critical") –, the individual was able to acquire different and more or less in-depth forms of knowledge, relating to the four dimensions involved, and adjust it according to his or her health practices.

What have we learned about the experiences of people living with diabetes? How are their health decisions influenced by their social situations, the resources provided by the health care system, and their relationships with their health management? Three accounts of patients (see Insets Patient accounts, pages 4, 5, and 6) illustrate the integration of different elements in the way in which they understand and manage their health. We also analysed the way in which these different elements interacted in the four dimensions of health management: food, physical activity, medical treatment, and monitoring of the disease (the verification of blood sugar levels by the individual and regular consultations with health care professionals).

The support of health care professionals and perceived social support help people adjust and maintain dietary practices that match their recommendations

Half of the people interviewed (42 people) expressed a "functional" relationship with food. In this type of relation, the individual followed the advice given to him or her by the reference health care professional(s). The practices were generally implemented without a critical approach and in an identical and/or repetitive way in everyday situations. In other words, the person said that they tried to follow as closely as possible the advice given by the health care professionals by adjusting their practices via different health actions: the limitation of certain foods (meat, charcuterie, and carbs), the addition of, or replacement by others (vegetables and fruits), the reduction in quantities, and even the elimination, for a third of them, of foods containing sugar (see Insets Patient accounts).

CONTEXT

The "Diab-quali" survey was a qualitative socio-anthropological survey connected with the ENTRED 3 epidemiological survey (a national representative sample of people with diabetes) implemented in 2019–2020 by *Santé Publique France* (SpF).
It was the result of a scientific partnership between SpF, the I*care* laboratory at the Université de La Réunion, responsible for conducting the survey, and the IRDES, which contributed as SpF to the reflections on the implementation of the survey and the analysis of the collected data within a monitoring committee for the project.

This research was integrated into the "ENTRED 3" study, which was positively received by the Committee for the Protection of Persons (*Comité de protection des personnes, Sud-Est*; no.2017-43) and the National Commission on Informatics and Liberty (Commission nationale informatique et libertés, CNIL; no. 918004).

Detailed results have been published in two publications: Balcou-Debuscche, 2024 and Balcou-Debuscche and Ballet, to be published.

> *"I'm careful about what I eat (...) not too much salt and I never have second helpings of the same food (...) there are limits. Some things I don't eat."*
>
> **Catherine, 73** (diabetes duration: > twenty years), had a "functional" relationship with food and secondary-level education (middle school)

The other half of the people surveyed had "interactive" or "critical" relationships with food. First, with regard to the "interactive" relationship, the participants were aware that they could have an impact on their disease and generally commit to act – occasionally or in a more long-term manner –on certain elements associated with the daily management of the disease. They then deployed their cognitive and social skills to adapt certain practices to changing situations, linked with the evolution of the disease and/or to new environments. They became aware that their diet needed to be varied and balanced and did not question their fundamental dietary practices.

> *"I try to eat a bit of everything, in moderation, rather than going without."*
>
> **Adrien, 66** (diabetes duration: between eleven and twenty years), had an "interactive" relationship with food and secondary-level education (secondary school)

For those persons who mentioned that they had a "critical" relationship with food, their active management of the disease was accompanied by the development of a critical approach, which enabled them to develop a unique way of living with the disease in interaction with their environment, however complex and fluctuating it may be. In other words, these people had integrated the presence of the disease into their daily dietary practices and adapted them to the circumstances.

> *"It's been hard, but I'm now able to control myself and I ensure (...) that my meal is balanced and includes carbohydrates and vegetables."*
>
> **Diane, 42** (diabetes duration: between eleven and twenty years), had a "critical" relationship with food and secondary-level education (secondary school)

For most of the people interviewed, the various adjustments to their diets were described as having been adopted following the recommendations of health care professionals, mainly GPs or dieticians. A number of the interviewed people also mentioned the assistance programme for chronic diseases (Sophia) run by the French National Health Insurance system (*Assurance maladie*), which operates via telephone calls to nurses or the sending of brochures to the homes of people with diabetes. Finally, a quarter of the interviewed persons said that they had benefitted from educational therapy sessions run by dieticians, generally during hospitalisations.

> *"I have examples of menus that I collected when I was hospitalised for diabetes. This is the kind of menu I use, with the right doses."*
>
> **Patrick, 69** (diabetes duration: < five years), had an "interactive" relationship with food and higher-level education

Certain people, however, spoke about the difficulty of putting this advice into practice.

> *"Look, I try to make normal, balanced meals. (...) I know it's not always easy; it's got nothing to do with the hospital. Because the hospital meals are ready-to-eat and they bring us meals. Whereas at home you have to make your own meals and get it right."*
>
> **Annie, 65** (diabetes duration: > twenty years), had an "interactive" relationship with food and secondary-level education (middle school)

While following recommendations and maintaining long-term dietary practices, the person's immediate circle also provided support. The participants spoke in particular of a form of solidarity on the part of the immediate circle, which sometimes adopted certain habits or dietary recommendations. Finally, some of the participants highlighted the important role of their spouse, who also became involved in meal preparation and tried to strictly follow the recommendations, sometimes after they attended educational courses about food preparation.

> *"My wife is extraordinary. She attended a cooking course aimed at type 2 diabetics, and she did some research on the internet (...). I only eat what she makes for me."*
>
> **Maël, 50** (diabetes duration: between six and eleven years), had a"critical" relationship with food and higher-level education

A low income level and living alone make it more difficult to adopt a balanced and varied diet

The link has been demonstrated between a low-income and a limited diet characterised by the consumption of sugary and ultra-transformed foods and a low consumption of fruit, vegetables, and fish, among others. (Darmon et al., 2010). Among the interviewed participants, one-third mentioned financial constraints and reported that they found it hard to buy quality food that matched the recommendations, such as organic food, wholemeal bread, local produce, etc. This was mentioned by Djénéba (see Inset Patient Account opposite) and Patrick, who attended patient education sessions in a hospital. He was given examples of menus to use, without considering his social situation.

> *"hen I selected my food, it was a bit too expensive. They give [the hospital] you products that you can't easily buy, which you only find in organic stores (...) so a diabetic meal becomes pretty expensive."*
>
> **Patrick, 69** (diabetes duration: < five years), had an "interactive" relationship with food and higher-level education

PATIENT ACCOUNT: Djénéba

Djénéba describes a "mostly interactive" relationship with the aspects involved in the management of diabetes, assisted by the resources provided by the health care system.

Djénéba is an interim cleaner, aged 45. She lives in a social flat in a large town in the Isère département with a population of 544,000 habitants (with a diverse primary care provision, which is sometimes limited for certain specialities such as ophthalmology, according to the Auvergne-Rhône-Alpes Regional Health Agency), with her two children and occasionally with her boyfriend, a seasonal worker in the ski resorts. Her diabetes was detected when she arrived in France in 2011 (Djénéba is Angolan). Djénéba has a mainly "interactive" relationship with the disease. In other words, she realised that she could have an impact on her disease and continuously act on the dimensions involved in the management of her diabetes. Owing to patient education sessions she attended during her numerous hospitalisations, and documentation from the Sophia programme, Djénéba realised that a healthy and balanced diet has a positive impact on her diabetes: *"I was always being interned [hospitalised]. A woman explained to me how to eat in a more balanced way. I realised that it was beneficial for my health and that I needed to make the effort"*. She tries to do her best given her income, which is low and irregular: *"I bought wholemeal bread. However, if I don't have enough money, I'll eat normal bread"*. Similarly, with regard to physical activity, Djénéba realised the benefits for her mental wellbeing and blood sugar levels: *"It works because afterwards (…); when I've exercised, I feel better. Because sometimes I feel unwell, so I look at the high reading. After going for a walk once I'm back, it's ok, at 40, 50"*. In terms of treatment and monitoring of the disease, Djénéba, who lives in a large town, has a substantial health care provision (she has regular consultations with health care professionals, with whom she says she has good relations), which helps with the therapeutic follow-up: *"No I don't forget to take my tablets [medication], it's like drinking water all the time (…). Even if I take a trip, I've always got my tablets handy"*. In Djénéba's case, the resources provided by the health care system (patient education sessions, documentation of the Sophia programme, and accessible health care supply) are the main supportive services that help her maintain her health. She sees her socioeconomic situation as an obstacle to having a high-quality diet. ■

In addition, the composition of the household affects the ease of following recommendations in terms of a balanced diet. Hence, 8 out of 17 people who lived on their own stated that the absence of support sometimes had an impact on their diet.

> *"I live on my own now. My husband passed away. In addition, I eat the wrong things. Some days I miss a meal then eat something that's no good. (…) you have to learn by yourself, and you have to cook."*
>
> **Romy, 71** (diabetes duration: between eleven and twenty years), had a "functional" relationship with food and primary-level education

PATIENT ACCOUNT: Lucie

Lucie describes an "interactive" and "critical" relationship with the dimensions involved in managing her diabetes, helped by her social situation and the resources provided by the health care system.

Lucie, aged 43 years, was diagnosed with diabetes in 2015 after the discovery of a genetic predisposition during her two pregnancies, marked by gestational diabetes. She is married, has two children, has received higher education, has no financial worries, and lives in an apartment in a large town in the Bouches-du-Rhône with a population of more than a million inhabitants (with a substantial supply in terms of health care professionals and facilities, according to the PACA Regional Health Agency). Lucie has a mainly "interactive" and "critical" relationship with the different dimensions of the disease. She actively managed her disease with a critical approach. Once her diabetes was diagnosed, Lucie looked into the disease, mainly in books and on the internet. When she found reliable information on the basis of scientific data, she tried to apply the following recommendations: *"I completely changed what I ate (…); I kept an eye on my glycaemic index and took it into account"*. She started to go running: *"My doctor said to me (…) either you lose weight or I'll have to put you on a course of medication. So I said to myself that's it I'm going to do some sport, get moving (…), so I started running"*. She never consulted a diabetologist because her doctor told her that as she had "minor diabetes", it was not necessary. Lucie can count on the support of her husband and children: *"They give me plenty of encouragement, even my children (…) My husband truly helps me with my diet (…), he tells me to eat plenty of vegetables"*. In Lucie's case, her social situation (higher-level education, perceived social support) and the resources linked with the health care system (mainly the information sources mentioned above, as well as her relationship with her GP) help her effectively manage her disease on a daily basis.

The regular practice of physical activity is facilitated by a person's living environment and social support

Most of the people interviewed had an "interactive" relationship (31 out of 84 interviewed) or a "critical" relationship (27 out of 84) with physical activity (see Inset Patient account opposite). They reported that the latter often contributed – before the diabetes diagnosis –to their quality of life and well-being.

> *"I had a great advantage in that I love sport. I don't see it as a constraint; it's a pleasure; it's almost like a drug."*
>
> **Alain, 59** (diabetes duration: between eleven and twenty years), had a "critical" relationship with physical activity and higher-level education

Physical activity was also practised because it was able to provide a benefit, particularly with regard to the balance of blood sugar levels.

> *"In every way, it's a certainty that walking has a positive effect on diabetes. Even if it doesn't bring it down; it regulates it."*
>
> **Hélène, 66** (diabetes duration: between eleven and twenty years), had an "interactive" relationship with physical activity and secondary-level education (secondary school)

The regularity of the exercise was facilitated by the person's family or friends, who were seen as a source of motivation.

> *"I met a female friend who's truly into sport and walking (…). We both love going for walks in nature."*
>
> **Hugo, 78** (diabetes duration: between eleven and twenty years), had an "interactive" relationship with physical activity and secondary-level education (middle school)

The places where physical activity was practised were generally near the homes of the people studied. The natural environment was all the more stimulating when the region in which they lived provided a variety of options for physical activities, as was the case in four of the five regions studied – Bretagne, Rhône-Alpes, Provence-Alpes-Côte-d'Azur (PACA), and La Réunion – and in certain areas of the Île-de-France region. That said, this study revealed that walking was the physical activity most often practised by the respondents.

> *"I like going for walks and I'm lucky enough to live at the foot of the Chaîne de l'Étoile. It takes me about half an hour to get there from my house."*
>
> **Luc, 64** (diabetes duration: < five years), had a "critical" relationship with physical activity, PACA region, and higher-level education

The interviews also highlighted people's accommodations (in this case, living in a house that sometimes had a garden), which enabled physical activities.

> *"I do lots of things at home. I sew, I do haircuts and gardening (…). I read and watch the telly, I go for walks (…) and then there's the housework and the house to look after."*
>
> **Jeanne, 71** (diabetes duration: < five years), had an "interactive" relationship with physical activity, the Rhône-Alpes region, and primary-level education

Physical problems linked with ageing and associated diseases were described as obstacles to regular physical activity

Sometimes, a physical activity can be truly "blocked" more or less permanently by physical problems linked with ageing (for example, arthritis, back pain and knee pain). The diseases associated with type 2 diabetes, mainly being overweight, which was mentioned in the interviews, can also make it difficult to perform physical activity. This was the case with Camille and Alice, who had a "functional" relationship with exercise. Although they had started to practice physical activity following the recommendations of their GPs, they were hampered by their weight issues.

> *"Even though my legs can't take it, because I'm overweight."*
>
> **Camille, 65** (diabetes duration: < five years), primary level education

> *"I can't do much sport because I'm still bit overweight."*
>
> **Alice, 74** (diabetes duration: < five years), primary-level education

The benefits of physical activity, whose regular practice helps to control blood sugar levels and, in particular, limits complications, are recognised (HAS, 2022) and recommended as a first-line treatment (HAS, 2024). Since 2016, doctors have been authorised to prescribe appropriate physical activity (*Activité physique Adaptée*, APA). However, among the people interviewed, only ten mentioned that they had received advice from a doctor about this subject, and the recommendations were vague about the type of physical activity required for that individual.

> *"My doctor told me:* 'You must do some exercise.'
>
> **Hugo, 78** (diabetes duration: between eleven and twenty years), had an "interactive" relationship with physical activity and secondary-level education (middle school)

> *"They told me to take up a sport."*
>
> **Colette, 59** (diabetes duration: between six and four years), had a "critical" relationship with physical activity and secondary-level education (secondary school)

When physical activity was suggested, it was sometimes not truly compatible with the person's social situation.

> *"He told me:* 'Go to the swimming pool'. *I replied,* 'Perhaps you can pay for the pool'. *I've got no money—I'm disabled; I only get 800 euros a month."*
>
> **Rose, 57** (diabetes duration: between six and ten years), had a "functional" relationship with physical activity and secondary-level education (middle school).

These results need to be compared with those of several studies conducted recently (Perwez, 2018; Dranebois, 2019) with regard to the prescription of physical activity by GPs in the context of type 2 diabetes. These studies show that doctors are unfamiliar with the APA therapists (Dranebois, 2019) and that there is a lack of time and training to promote the prescription of physical activity (Perwez, 2018).

The perceived quality of the relationship with health care professionals and perceived social support facilitate care continuity and monitoring of the disease

According to a recent study by the French Directorate for Research, Studies, Assessment and Statistics (DREES), 74% of the people interviewed considered that access to care, which is both geographic and financial, was satisfactory, with each person stating that they were able to be treated, no matter where they lived and whatever their income (DREES, 2021). However, the people interviewed were more critical about the care offered, with respect to the quality of the care provided, the diversity of accessible health care professionals, and the waiting times to obtain a consultation. In the framework of the "Diab-quali" research, few people mentioned difficulties in accessing care. However, the statements made by ten people who expressed negative opinions match the results of the DREES study (2021) about the quality of care, highlighting in particular the lack of availability of GPs and sometimes the difficulty of obtaining a consultation with a diabetologist.

In addition to diet and physical activity, medical treatment and monitoring of the disease are the third and fourth pillars, respectively, of the treatment of diabetes. The latter requires a daily dose of medication, in the form of tablets or insulin injections, as well as regular monitoring by a body of health care professionals (GP, diabetologist, cardiologist, ophthalmologist, pedologist, etc.) and, in certain cases, by the diabetic person themself (controlling blood sugar levels). Two-thirds of the people interviewed had a "functional" relationship with their treatment (51 out of 84 persons interviewed), and just over half (48 out of 84) also had a "functional" relationship with the monitoring of the disease. They claimed that they did their best to follow the prescribed treatment, controlling their blood sugar levels every day when recommended and regularly consulting health care professionals.

> *"I've got a device (...) I take measurements in the morning when I wake up, I take a measurement at 10 a.m., I do the same before the midday meal, at 3 p.m., in the evening, at 10 p.m., and at midnight (...) I measure the levels—the doctor told me to do it this way. So I do as he says."*
>
> **Emma, 73** (diabetes duration: > twenty years), had a "functional" relationship with the treatment and monitoring of the disease and secondary-level education (middle school)

For the individuals with an "interactive" or "critical" relationship, the treatment and monitoring of the disease – as well as being integrated into daily habits – sometimes needed to be adapted and discussed with the doctor, depending on the person's lifestyle.

> *"I'm used to doing injections [of insulin]. I've got two—one is slow and the other fast. I spoke to a doctor because I realised that I didn't need so much. So I gradually decreased the doses."*
>
> **Lucas, 60** (diabetes duration: between eleven and twenty years), had a "critical" relationship with the treatment and monitoring of the disease and higher-level education

The people interviewed saw their GPs as the main health care professional in terms of monitoring the disease, a result already underlined in the ENTRED 2007–2010 study (Fournier et al., 2014).

PATIENT ACCOUNT: Marin

Marin describes a predominantly "functional" relationship with managing his diabetes, facilitated by perceived social support.

Marin, aged 63, is retired and a former financial advisor at a bank. He is married and lives in a house in a town in Seine-Saint-Denis (where primary care services are underrepresented in terms of healthcare professionals). Diagnosed with diabetes about ten years ago, Marin believes that alcohol abuse triggered his diabetes: "*I was an alcoholic, it's true. Every day at lunchtime, I would have a drink, and it wasn't just a small one.*" He has a largely "functional" relationship with the constituent dimensions of the disease. In other words, he follows the advice given to him by his caregiver(s) without questioning it. In this case, he relies mainly on his wife, whom he considers to be his *"tape recorder"*, since he says he has *"the memory of a goldfish"*. She provides him with genuine therapeutic support and is involved in all aspects of managing his condition. She monitors his diet to ensure that *"he does not consume too much sugar"*. She understands the treatment and its role – *"Metformine (...) eliminates sugar (...)"* – and attends all of her husband's medical appointments: *"the diabetologist, but so far, she has only examined his arteries"*. In addition, she regularly conducts research online to keep up to date with alternative and/or complementary solutions: *"I look more at traditional medicine, things like turmeric or cinnamon, things like that which you take, natural products that can help the body with minor problems you might have"*. In Marin's case, the social support of his wife is the main help he receives in maintaining his health. ■

In our study, the GP was primarily recognised for his or her relational skills (the quality of his or her interactions and availability) before his or her medical skills (knowledge about and monitoring of the disease). The GP was also the main contact in terms of information about diabetes for the people interviewed, which was mentioned by most of them (53 out of 84 persons interviewed), followed by the internet (36 persons) and Sophia, the programme run by the *Assurance maladie* dedicated to informing patients about diabetes (35 persons).

> *"I'd rather speak to my doctor than hunt around for information on my own."*
>
> **Hélène, 66** (diabetes duration: between eleven and twenty years), had a "functional" relationship to the treatment and monitoring of the disease and secondary-level education (secondary school)

This result should be linked to the knowledge of the people interviewed, who explained the causes of their diabetes in a relatively imprecise way and generally pointed to a single factor (sugar or heredity).

> *"I don't know, because my sister also has it. So I think it's hereditary."*
>
> **Mireille, 77** (diabetes duration: between six and dix years), had a "functional" relationship to the treatment and monitoring of the disease, secondary-level education (middle school)

These results can be interpreted, on the one hand, as a sign of respect and confidence in the competency of the reference health care professional and, on the other hand, as a desire – consciously or not – to avoid overloading the mind with constantly changing complex information.

Amongst the interviewed persons, half had never consulted a diabetologist, which mirrors the results of the "ENTRED 3" study, according to which, over the twelve months preceding the survey, 22% of the persons interviewed in mainland France and 15% in La Réunion had consulted a diabetologist (Fosse-Edorh et al., 2023). Hence, the interviews highlighted the role of the GP, who was entrusted with the decision, depending on the case of the person with diabetes, of being or not being referred to a specialist.

> *"She [the GP] is good because if there's a problem she'll refer you to a specialist. If she tells me, 'You could do with seeing a diabetologist', I'll do just that. If she says nothing, it means everything's OK."*
>
> **Gabriel, 67** (diabetes duration: between eleven and twenty years), had a "critical" relationship with the treatment and monitoring of the disease and secondary-level education (middle school)

The persons who attended patient education sessions were in the minority in the study (20 individuals), and for most of these individuals the sessions were proposed during hospitalisation, mainly on the theme of diet.

While the monitoring of the disease was, for the people interviewed, carried out mainly by health care professionals, the person's close circle was considered an ally and was likely to take on several roles in managing the treatment and monitoring of the disease. The person's close circle can ensure that the treatments are followed, provide care, and arrange consultations and accompany the person to the scheduled medical consultations.

> *"If I have an ingrown toenail, my wife deals with it. She takes better care of my feet than a pedologist."*
>
> **Pierre, 72** (diabetes duration: > twenty years), had a "functional" relationship with the treatment and monitoring of the disease and secondary-level education (secondary school)

* * *

This study was conducted with 84 people living with type 2 diabetes, who, for the most part, reported that they had changed their lifestyle and followed the prescribed treatment. Among these people living in five regions in France, who mostly adhered to medical standards, the research has shed light on the links between the management of their disease, their health literacy, and their social situation and has complemented the quantitative analyses carried out in the ENTRED 3 study (Fosse-Edorh et al., 2022; Fosse-Edorh et al., 2023).

This study highlights the plurality of the profiles of people living with type 2 diabetes. The latter developed differentiated relationships – "functional", "interactive" or "critical" – with the management of their diet, their physical activity, their treatment, and the monitoring of the disease. These relationships with health management, which may change over time, should not be understood in hierarchical terms or as goals to be attained (Balcou-Debussche, 2016) but as interesting points of reference for the caregivers, both in acknowledging the care work carried out by the individuals, providing them with the necessary support, and providing them with effective support in their health itineraries.

Most of the people in our panel, which were largely people with privileged social profiles who reported that their disease was closely monitored, had an "interactive" or "critical" relationship with food and physical activity. In other words, their benefits were known in most of the cases, and the people attempted to adapt them every day while considering their own constraints. However, these people had a mainly "functional" relationship with the treatment and monitoring of the disease. Thus, they followed their GPs' prescriptions 'to the letter' as a main reference for the management of their diabetes.

For all the people interviewed, the every day support of their immediate circle and the assistance provided by health care professionals during the follow-up consultations were crucial elements for facilitating the implementation of the recommendations concerning their health management. These two types of support deserve to be further explored at the individual level, along with other elements that make following these recommendations less easy, such as poor financial resources, a living environment that does not lend itself to physical activity, physical problems, or complications of the disease, to take them into account and explore ways of overcoming them.

As with health literacy, the relationship with health management seemed to be linked to the person's educational level. Thus, our analyses confirmed that the higher the educational level was, the more the relationships with health management were "interactive" and "critical". However, this link is more complex than it seems, as several people with lower educational levels also developed "interactive" relationships with their health management. Thus, the main challenge for the people consisted of identifying reliable sources to sift through contradictory information and develop a critical approach by consulting a broad range of references for the daily management of their health with a chronic disease.

Hence, the observation of the plurality of practices and needs, which vary over time, invites health care professionals to take into account the health literacy of each person and the relationships he or she has with their health management. On the one hand, these results emphasise the importance of the relational aspect of health care, using plain language that is adapted to the literacy of each person and developing an educational approach based on the resources of the person via communication techniques that promote active listening and reformulation. On the other hand, these results emphasise the importance of providing personalised support and targeted patient education adapted to each person by considering his or her needs with regard to managing the disease. With respect to physical activity, for example, a specific accompaniment could be proposed more systematically to overcome the impediments and reticence associated with a physical disability, in particular by recommending or prescribing a suitable physical activity. Finally, even though the GP is still the main adviser for diabetes, it is important to help people develop a network that enables them to have access to more support, such as associations of patients, advanced practice nurses, public health nurses, appropriate physical activity educators, and patient education programmes, which constitute valuable resources for maintaining a lifestyle that promotes good health.

The results of this study emphasise the importance of continuing research on inter- and intraindividual variations in health practices in different contexts, in particular amongst persons who experience multiple and lasting situations of vulnerability. The training of health care professionals could help to better integrate these notions to facilitate structured exchange over the relational and linguistic dimensions that need to be taken into account in interactions with patients. Finally, health facilities and organisations could also use these results to develop support services adapted to the needs of the inhabitants of their regions in conjunction with the representatives of the persons concerned. This triple perspective – research, training, and organisation – could help with the evolution of our health care system through the development of preventive and support services adapted to the needs of people living with a chronic disease.

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