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Opinion of Diabetic Patients on the Difficulties of Their Care during the COVID-19 Pandemic

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Abstract

***Introduction*:** This COVID-19 pandemic represents a major challenge for ensuring continuity of care during a health crisis and raises questions about the risks incurred in the event of chronic illness (es). Among these, diabetes affects more than half a million people in Belgium, one in five of whom is over 65 years old. This study aims to understand the opinions of patients suffering from diabetes on the difficulties of their care during the covid19 pandemic. ***Methods*:** This is a qualifying phenomenological study, it is exploratory descriptive. It falls within the field of public health. The target population consisted of patients suffering from diabetes and who receive care either on an outpatient basis or in hospitalization at the diabetology department of the General Provincial Reference Hospital of Kinshasa, the number of which is nine diabetics. She used the phenomenological inquiry method and the face-to-face semi-structured interview technique. ***Results*:** After analyzing the collected data, we found the following results: diabetics were treated by home care, by telephone contact following the instructions of the diabetologist, but also by self-care. The difficulties encountered by diabetics are linked to the freedom to freely engage in physical exercises and other activities and those to contact with the healthcare team; and these difficulties encountered have generated a psychological discomfort. In terms of expectations, diabetics want caregivers to grant them a certain framework of freedom and to computerize the care system (telemedicine or telenursing). ***Conclusion*:** Considering these results, we strongly suggest that all health facilities that care for diabetics implement telemedicine and/or telenursing in the care of diabetics during periods such as the pandemic.

Keywords: Opinion, Diabetic Patients, Difficulties, COVID-19 Pandemic Management.

1. INTRODUCTION

Diabetes is therefore one of the most frequently reported comorbidities in patients with COVID-19. According to current data, diabetic patients do not appear to be more exposed to SARS-CoV-2 infection than the general population. On the other hand, diabetes appears to be a risk factor for progression to severe and critical forms of COVID-19. The latter require admission to intensive care or even the use of invasive mechanical ventilation and can lead to death. Obesity, the main risk factor for the onset of type 2diabetes, is also more common in patients with critical forms requiring invasive ventilatory support (Laura Orioli, *et al*., 2020).

Patients with diabetes represented 10 to 20% of people hospitalized, 22% of those admitted to intensive care and 31% of deaths, noting that 48% of people who died had hypertension and 24% had CVD, but it is not possible to say whether these factors were independent or related to age. Overall, diabetes was associated with an odds ratio of hospital mortality of 2.85 (95% CI 1.35-6.05, p=0.0062) *(La Société Francophone des Diabètiques, 2020;* Wu Z, Googan JM, 2020).

One of the physiopathological hypotheses is the increased expression of angiotensin-converting enzyme 2 (ACE 2) in diabetic patients, both type 1 and type 2. This enzyme, expressed in the lungs, the intestine, kidneys and blood vessels, would be preferentially linked by SARS-CoV-2 and could explain more serious damage in certain groups of patients. In addition, hyperglycemia, whether acute or chronic, is known to alter the response of the immune system, leading to an exaggerated pro-inflammatory response, a state which has been observed

in severely ill COVID-19 patients, this relationship between diabetes and severe forms of COVID-19 is also due to a statistical association: the most severe forms or deaths are mainly seen in patients over 65 years old, a population in which the prevalence of diabetes is high. Let us recall in this respect that around a quarter of people over 75 have type 2 diabetes (Drs Christophe Kosinski, Anne Zanchi and Pr Anne Wojtusciszyn, 2020).

Due to the health emergency, knowledge regarding this new coronavirus is progressing rapidly. The characteristics of diabetic patients at risk of severe and critical forms of COVID-19 as well as the prognostic impact of diabetes on the course of the infection are currently the subject of several studies (Laura Orioli, *et al*., 2020).

Furthermore, it should be noted that COVID-19 worsens glycemic balance and promotes the occurrence of metabolic complications such as ketoacidosis. Due to the risk of lactic acidosis and ketoacidosis, metformin and SGLT2 inhibitors will be discontinued in severe forms of COVID-19. Finally, we recommend systematic screening for (pre)diabetes in patients with demonstrated SARS-CoV-2 infection (Laura Orioli, *et al*., 2020).

A very reassuring element is that no deaths have been reported in children under 10 years old. Since the very beginning of the epidemic (including in newborns) and that serious forms are very rare in those under 20 *(La Société Francophone des Diabètiques, 2020)*.

In Europe, in the weekly report published by Sciensano, the Belgian health institute, on April 30, 2020, the average prevalence of pre-existing diabetes in patients hospitalized for COVID-19 reached 21.2%, which makes diabetes one of the comorbidities the most frequent. This result is, however, well beyond the prevalence of 6% found in the general Belgian population (aged 15 and over) and reported in a Health Survey carried out in 2018 as well as by the International Diabetes Federation (IDF) in 2016.

However, this difference must be interpreted with caution given the limitations imposed in the performance of COVID-19 diagnostic tests and the methodological differences between the different data collections. The prevalence of diabetes among hospitalized patients with COVID-19 increases as expected with age, while remaining higher than the results of the 2018 Health Survey (World Health Organization, 2020).

An Italian team (Padua) reported a prevalence of 8.9% (6). These prevalences being comparable to those usually observed in the general population of these regions, diabetic patients do not seem to be at greater risk of contacting COVID-19 than the general population. (Fadini GP, Morieri ML, Longato E *et al.*, 2020).

Although diabetic patients are considered to be at greater risk of infection, recent studies have shown that these are primarily fungal and bacterial infections, particularly soft tissue infections, urinary tract infections and pneumonia. Community infections (notably pneumococcal). Viral infections, such as seasonal flu, are usually not more common in diabetic patients than in the general population. Regarding influenza, diabetes is however recognized as a risk factor for developing a severe or critical form of the infection (Zou Q, Zheng S, Wang X *et al.*, 2020).

This is why, in the absence of available treatment against the COVID-19 coronavirus, diabetic patients at greater risk of contagion and complications must follow the instructions for the general public and ensure, with the help of health professionals, to ensure that glycemic balance is optimal according to objectives adapted to each patient. But the fight against infections also involves vaccination coverage, which will be necessary to promote in the hope of the rapid discovery of a vaccine against COVID-19 (Caroline Huin, 2020).

Patients with type 1 or 2 diabetes must continue to benefit from regular medical care and monitoring during the COVID-19 epidemic; and diabetic patients must scrupulously respect barrier measures. During the confinement period, health professionals (doctors, nurses, etc.) must remind their patients of the signs of worsening or complications of their diabetes, the signs of COVID-19 and the need to contact their doctor in the event of unusual symptoms (French Diabetic Federation, 2020).

The confinement linked to the COVID-19 pandemic has led to major restrictions on the movement of the population. Travel was prohibited except in certain situations. Among these situations, we can cite the difficulties in seeking care for patients with chronic pathologies such as diabetes. A study shows that during the confinement period, the total number of consultants fell by 62% compared to the same period in 2019 (7279 vs 2780; $p < 10^{-3}$). This reduction was more marked during the second week of confinement (81%) but without a statistically significant difference between the six weeks. Around 2/3 of patients gave up their consultations. The number of new patients decreased by 100% (217 versus 0 cases). The confinement led to a drastic reduction in the activity of outpatient diabetology consultations. The gradual return to normal must be well organized to avoid overcrowding of consultations and limit any risk of contamination (Dridi, *et al*., 2020).

In order for healthcare professionals to maintain monitoring of their patients despite confinement, without postponing the necessary consultations, teleconsultations and tele-care are being implemented in many structures.

The priority is to continue the normalization of glycemic balance as in normal times. As such, the

commitment of patients in respecting health and diet measures specific to diabetes compatible with confinement is essential (diet, potential iatrogenics regarding certain medications, weight maintenance, activity at home, etc.). Healthcare professionals ensure that the patient has their medication treatments: insulin and the corresponding injection means, oral medications as well as blood sugar monitoring devices. The patient should never suspend insulin injections (or via an insulin pump), not change treatment without the advice of their doctor, nor practice self-medication (Fédération Française des Diabétiques, 2020). This study aims to understand the opinions of patients suffering from diabetes on the difficulties of their care during the covid19 pandemic.

2. MATERIAL AND METHOD

2.1 Field and Type of Study

This study falls within the field of public health. This is a qualifying phenomenological study, it is exploratory descriptive.

2.2. Study Location, Target Population and Sampling

We chose the diabetology department of the Provincial General Reference Hospital of Kinshasa.

Regarding our study, the target population is made up of patients suffering from diabetes and who receive care either on an outpatient basis or in hospitalization at the diabetology department of the Provincial General Reference Hospital of Kinshasa.

The participants were chosen intentionally. We opted for a purposive sample. Omanyondo (2013) explains that in this approach, the subjects of the study are selected according to a criterion of relevance; that is to say according to whether they are likely to provide useful information to the study or according to whether they have the characteristics sought by the study. In qualitative research, determining the number of participants is usually dictated by data saturation, i.e. when the addition of a new participant no longer provides new information (Fortin *et al*., 2013).

The interview of diabetic patients were interviewed until the data became repetitive and nothing new of interest was added. It is thanks to saturation and the use of cases that our sample was set at 9 subjects.

2.3. Data Collection Method, Technique and Instrument

This study used the phenomenological inquiry method and face-to-face semi-structured interview technique. The data collection instrument essentially consisted of an interview guide with a smart phone for recording. It is developed in three parts, the first of which consists of information on the socio-demographic characteristics of the actors and the second part devoted to questions related to opinion on the phenomenon being studied.

2.4. Data Analysis Plan

Content analysis is thematic and categorical. According to Addât cited by Mukandu (2020) “The analysis of the materials collected always begins by dividing these materials into categories of analysis, which frequently correspond to themes. We then speak of thematic categories. We have chosen categorical analysis which cuts transversely what, from interview to interview, would refer to the same theme.

In our analysis, we first chose our categories based on the research objectives and the direction of the literature. For our studies, the categories retained are three in number and the Subthemes are two in number.

The data analysis was focused solely on the respondents' speech. The verbatim of the redundants were grouped together in a cloud to bring out the categories. The meaning given to these categories allowed us to obtain elements of response to the research questions in the different aspects that we wanted to address, by eliminating repetitions.

2.5 Ethical Consideration

Before being in contact with the subject being the subject of our study, we took care to explain to them what we would like to do. In short, informed consent helped us collect data from subjects while ensuring confidentiality and anonymity. Certain moral and ethical values were taken into account with our population by following the following approach: Greet the respondent; Explain the reason for the research; Request agreement to participate in the study; Collect perceptions through the Interview Guide; If necessary, ask him to withdraw at any time if he wishes; Guarantee the anonymity and confidentiality of the information obtained; Inform him to come back after the transcription of the perceptions; Thank him at the end for the expressed willingness to participate actively in the investigation.

3. RESULTS

3.1 Results on Sociodemographic Characteristics

This first box tells us that the sociodemographic characteristics are marked by diabetics receiving outpatient care, aged 32 to 63; made up of teachers, state civil servants and housewives including five men and four women with a duration of illness ranging from 1 year to 18 years.

3.2 Results of the Qualitative Analysis

The categorical analysis consisted of grouping (by going back and forth) the verbatim (in the form of words) with regard to coherent categories and themes. After the full reading of our transcriptions of the interviews recorded with nine traveling diabetics, having used the syntactic analysis unit in a closed coding of the interviews, according to a data analysis matrix at four levels: subtheme, categories, verbatim and meanings. The central theme retained is: “Opinion of diabetics on the difficulties of care during the covid-19 pandemic”.

Box 1: Distribution of study subjects according to their sociodemographic characteristics

Initial	Age	Occupation	Sex.	Duration of illness	Mode of supported
DIAB1	63 years old	Official	Male	15 years	Ambulatory
DIAB 2	32 years old	Teacher	Feminine	2 years	Ambulatory
DIAB 3	50 years	Official	Feminine	5 years	Ambulatory
DIAB 4	41 years	Household	Feminine	7 years	Ambulatory
DIAB 5	65 years	Official	Male	5 years	Ambulatory
DIAB 6	55 years	Official	Male	1 year	Ambulatory
DIAB 7	56 years old	Official	Male	11 years old	Ambulatory
DIAB 8	49 years	Household	Feminine	8 months	Ambulatory
DIAB9	60 YEARS	Official	Male	18 years old	Ambulatory

The syntactic unit is a sentence or a group of words from the verbatim interviews or observation notes; that is, ideas expressed. The data analysis was only focused on the speeches. The redundant verbatim were then grouped together in a cloud to bring out the categories.

From this central theme retained, two sub-themes arise, namely: Opinion of diabetics on care and expectations regarding this care.

3.2.1 Opinion of Diabetics on Treatment

- **Support Arrangements During Covid Period**

Diabetics were treated by home care, by telephone contact following the instructions of the diabetologist, but also by self- care. Some diabetics express themselves on this in this way: DIABE1: "*It's clear! I am lucky to have a diabetologist on my phone and especially with the Whatsapp application, I can follow her advice and get started without difficulty.* » ; DIABE5: " *If I have difficulties, I simply go to the diabetologist's cabin, but on the contrary I follow my treatment at home and speak with the lady who treats me next and she even comes here to the house if I need of her.* ". DIABE6: "*You know, I make my efforts every day! I take recommended foods, I drink enough water, I don't eat chocolate even though I love it, when I only eat a piece of toast, etc. I do my 15 km exercise bike!* ". There.

- **Difficulties Encountered Mainly During the Covid-19 Pandemic**

The stories of these diabetics explain that they had the difficulties linked to the freedom to wander freely about physical exercises and other occupations and those to contact with the healthcare team. They say this: DIABE2 *"Being deprived of my freedom has a real psychological impact. When you are sick, confine yourself and call only when there is a problem, but sometimes the networks can bother without you reaching the doctor. So I'm experiencing it rather badly."* DIABE3 *"My blood sugars were high for the first two weeks. I don't know if it was due to insulin resistance, lack of activity or just the coronavirus (probably a mix of all 3), but dealing with it all became very complicated.* DIABE9 *"The difficulty in managing my blood sugar levels persisted several weeks after the symptoms stopped. I attribute this mainly to the reduction in physical activity : I was tired, so I didn't exercise as much as usual, so my blood sugar tended to be high and my insulin needs higher. In particular, I increased my basal to adapt it to these greater needs."* DIAB 4 "*It's not easy not to snack during this confinement.* »; "*With confinement I only sleep and eat. Imagine the rates… It's getting tough!* »; "*I can't exercise anymore, I'm starting to get demotivated!"* »

- **Consequences Caused by Difficulties**

The difficulties encountered by diabetics have created a psychological discomfort. These statements confirm this: DIAB 3, DIABE6 *"The difficulty in managing my blood sugar levels persisted several weeks after the end of the symptoms. I attribute this mainly to the reduction in physical activity: I was tired, so I didn't exercise as much as usual, so my blood sugar tended to be high and my insulin needs higher. In particular, I increased my basal to adapt it to these greater needs."*

DIABE2 *"Being deprived of my freedom has a real psychological impact. Not being able to smell and taste my meals anymore depresses me terribly. When you are sick, confined and working from home, meal breaks are supposed to be a rare moment of joy and comfort. So I'm experiencing it rather badly. »*

DIABE8 "*It's a question of survival. It is certainly painful, but let us remember that it is a chronic disease which affects absolutely all the other organs. All this restrictive protocol just allows us to spend a few more years with ours.*".

3.2.2: Waiting for Diabetics

- **Waiting for Care Benefited From Nursing Staff**

In terms of expectations, diabetics want caregivers to grant them a certain framework of freedom and to computerize the care system (telemedicine or telenursing). As these three diabetics express it: DIABETO 1, 4 "*I have just had a video medical consultation with my GP's replacement. She told me that I had better give up the idea of going for a walk because Covid is more dangerous for us...I didn't like it at all...* ". DIABETO 8 *"I think that our hospitals here must seek to adopt the technology of the whites who have computerized everything to the point that patients are in regular contact with the care team."*

4: DISCUSSION

The results of this study indicate that the sociodemographic characteristics are marked by diabetics receiving outpatient care, aged 32 to 63; made up of teachers, state civil servants and housewives including five men and four women with a duration of illness ranging from 1 year to 18 years. On the other hand, in a study carried out on a large sample of 207 diabetics including 135 men. The average age is 64 years old. Type 2 is found in 96%. The average duration of diabetes is 10 years. Diabetes was discovered in 42 patients (20%). Antidiabetic treatments included metformin (68%), sulfonamides (36%) and insulin (42%). Associated comorbidities: obesity (43%), hypertension (50%), lipidemia (22%), retinopathy (22%), coronary artery disease (16%) and stroke (4%) (Ali Lounici *et al*., 2021).

Diabetics were treated by home care, by telephone contact following the instructions of the diabetologist, but also by self- care. In the first modality, a diabetic expresses himself by saying: DIABE 1: "*It's clear! I am lucky to have a diabetologist on my phone and especially with the Watsap application, I can follow her advice and get started without difficulty.* » ; DIABETO 5: " *If I have difficulties, I simply go to the diabetologist's cabin, but on the contrary I follow my treatment at home and speak with the lady who treats me next and she even comes here to the house if I have need her.* ". Indeed, during this period of confinement, health professionals (doctors, nurses, etc.) must remind their patients of the signs of worsening or complications of their diabetes, the signs of COVID-19 and the need to contact their doctor in case of unusual symptoms (French Diabetic Federation, 2020). Self-care is a significant step forward to encourage in a diabetic, like the one who speaks here: DIABETO 6: "*You know, I make my efforts every day! I take recommended foods, I drink enough water, I don't eat chocolate even though I love it, when I only eat a piece of toast, etc. I do my 15 km exercise bike!*". There.

Diabetics explain that they have had difficulties linked to the freedom to freely engage in physical exercises and other activities and those relating to contact with the healthcare team. This one says: DIABETO 2 *"Being deprived of my freedom has a real psychological impact. When you are sick, confine yourself and call only when there is a problem, but sometimes the networks can bother without you reaching the doctor. So I'm experiencing it rather badly."* Certainly the confinement has led to a drastic reduction in the activity of outpatient diabetology consultations. The gradual return to normal must be well organized to avoid overcrowding of consultations and limit any risk of contamination (Dridi, *et al*., 2020).

Others also say: DIABETO 3 *"My blood sugar levels were high during the first two weeks. I don't know if it was due to insulin resistance, lack of activity or just the coronavirus (probably a mix of all 3), but dealing with it all became very complicated.* DIABETO 9 *"The difficulty in managing my blood sugar levels persisted for several weeks after the end of the symptoms. I attribute this mainly to the reduction in physical activity: I was tired, so I didn't exercise as much as usual, so my blood sugar tended to be high and my insulin needs higher. In particular, I increased my basal to adapt it to these greater needs."* DIABETO 4 "*It's not easy not to snack during this confinement.* »; "*With confinement I only sleep and eat. Imagine the rates… It's getting tough!* »; "*I can't exercise anymore, I'm starting to get demotivated!* ". The confinement linked to the COVID-19 pandemic has led to major restrictions on the movement of the population. Travel was prohibited except in certain situations. Among these situations, we can cite the difficulties in seeking care for patients with chronic pathologies such as diabetes.

These difficulties above lead, according to the people interviewed, to a psychological gene. This is what they approve of in these stories: DIABETO 3, DIABETO 6 *"The difficulty in managing my blood sugar levels persisted several weeks after the end of the symptoms. I attribute this mainly to the reduction in physical activity : I was tired, so I didn't exercise as much as usual, so my blood sugar tended to be high and my insulin needs higher. In particular, I increased my basal to adapt it to these greater needs."* DIABETO 2 *"Being deprived of my freedom has a real psychological impact. Not being able to smell and taste my meals anymore depresses me terribly. When you are sick, confined and working from home, meal breaks are supposed to be a rare moment of joy and comfort. So I'm experiencing it rather badly. »* DIABETO 8 "*It's a question of survival. It's certainly painful, but let's remember that it's a chronic disease that affects absolutely all the other organs. All this restrictive protocol just allows us to spend a few more years with ours.*".

In terms of expectations, diabetics want caregivers to grant them a certain amount of freedom and to computerize the care system (telemedicine or telenursing). »

This last strategy is strongly recommended to health professionals in order to maintain the monitoring of their patients despite confinement, without postponing the necessary consultations, teleconsultations and tele-care are implemented in many structures. To go further, a study confirms that in 3 months, a non-significant average reduction of −0.33% in the level of glycated hemoglobin (HbA_{1c}) was observed in the group followed by teleconsultation ($n = 175$) compared to −0.13 % in the group without teleconsultation ($n = 92$). In the teleconsultation group, HbA_{1c} decreased from 7.65 ± 1.19% to 7.18 ± 0.9% for patients followed in hospital ($n = 97$), and from 7.28 ± 0. 80% to 7.11 ± 0.79% for patients followed in the city ($n = 78$). Another study shows that Ninety-two percent of patients declared

themselves satisfied with their teleconsultation, positioning teleconsultation as an alternative to a face-to-face consultation and would recommend it to another diabetic patient. While seven out of eight diabetologists have never carried out a teleconsultation, all wish to continue this method of monitoring after the health crisis. (Mathilde Flocard *et al*., 2020).

CONCLUSION

In the midst of the Covid-19 epidemic, diabetics must be extra vigilant because they are at greater risk of serious forms. This demonstrated that during the confinement period, diabetics were cared for by home care, by telephone contact following the instructions of the diabetologist, but also by self-care. The difficulties encountered by diabetics are linked to the freedom to freely engage in physical exercises and other activities and those to contact with the healthcare team; and these difficulties encountered have generated a psychological discomfort. In terms of expectations, diabetics want caregivers to grant them a certain amount of freedom and to computerize the care system (telemedicine or telenursing).

Considering these results, we strongly suggest that all health facilities that care for diabetics establish telemedicine and/ or telenursing in the care of diabetics during times such as the pandemic.

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