EDITORIAL

Diabetes and COVID-19: Challenges for the health system

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Take care of your body. It's the only place you have to live
Jim Rohn

Two years ago I would not have imagined that, from one day to the next, receiving a warm hug from my family and friends would become part of a risk factor and even more, avoiding this action; since it was taken as a security measure that was called social distancing. December is a month of coexistence, parties and reflection, but in December 2019, these celebrations were held amid news coming from China, about the beginning of an outbreak of an acute respiratory disease characterized by fever, headache, cough, sneezing, myalgia, arthralgias and shortness of breath that spread throughout the world.

The appearance of a new coronavirus that was called severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which causes coronavirus disease 2019 (COVID-19), caused sanitary measures, social isolation and mobility restrictions for people, that changed the lifestyle of the population. COVID-19 is a global public health problem. On June 22, 2022, 538,321,874 confirmed cases of COVID-19 and 6,320,599 deaths were reported internationally; Mexico ranks fifth in the number of deaths from COVID-19, after the United States of America, Brazil, India and Russia (table 1)[1].

Diabetes is a health problem that has reached alarming levels worldwide. It is known that today more than 500 million people live with diabetes worldwide. It is estimated that 1 in 2 adults is unaware that they are already living with diabetes, causing 240 million people worldwide to live with undiagnosed diabetes. It should be noted that Mexico is the eleventh largest population in the world and ranks seventh worldwide with the highest number of people with diabetes (14.1 million) after China (140.9), India (74.2), Pakistan (33.0), the United States United States (32.2), Indonesia (19.5), and Brazil (15.7)[2].

There is a clear need to detect diabetes early, implement non-pharmacological and pharmacological treatment early, and initiate actions to prevent complications. The key point is to create multidisciplinary groups, improve the quality of first contact care beyond diagnosis, and adequately monitor patients.

It is known that the main factors that favor the increase in the prevalence of diabetes are genetic background, unhealthy habits, including poor physical activity, sedentary lifestyle, increased consumption of foods rich in calories, sugars or saturated fats, aging population, and the growth of the urban population in marginalized areas[3]. Undoubtedly, there is evidence that changes in lifestyle have effects in controlling the disease and even more so in delaying the appearance of complications. Without forgetting that many patients have other comorbidities and risk factors that must be taken into account, such as obesity, arterial hypertension, dyslipidemia, polycystic ovary, gestational diabetes, cardiovascular diseases, etc.

Diabetes and its most common comorbidities are associated with higher mortality. This increase is usually observed in people over 60 years of age and in those who suffer from some type of diabetes, obesity

Table 1. Countries with the highest number of COVID-19 deaths and their relationship to total confirmed cases and diabetes prevalence

Country	Number of deaths*	Total per 100 000 population*	Total confirmed cases*	Total per 100 000 population*	Diabetes prevalence (%)**
United States of America	1,003,894	303.29	85,332,271	25,779.94	10.7
Brazil	669,161	341.81	31,754,465	14,939.10	8.8
India	524,903	38.04	43,331,645	3,139.96	9.6
Russia	380,643	260.83	18,406,485	12,612.98	5.6
Mexico	325,417	252.39	5,877,837	4,558.84	16.9
Peru	231,395	647.2	3,600,993	10,921.42	4.8
United Kingdom	179,706	264.72	22,525,810	33,181.82	6.3
Italy	167,842	281.42	17,959,329	33,112.14	6.4
Indonesia	156,702	57.35	6,072,918	2,248.10	10.6
France	145,811	224.19	29,258,921	44,986.48	5.3
Iran	141,370	168.31	7,235,175	8,614.03	9.1
Germany	140,462	168.89	27,454,225	33,011.07	6.9

*Number of deaths, total confirmed cases, total per 100 000 data, June 2022.
**Prevalence (20–79 years) with diabetes in 2021.

and hypertension. Patients diagnosed with diabetes infected with SARS-CoV-2 have a higher rate of hospitalization, severe pneumonia, and increased mortality compared to those without diabetes infected with SARS-CoV-2. Therefore, having diabetes is a risk factor and modifies the prognosis in COVID-19, it has been shown that diabetes increases the risk of severity by 2.3 times and the risk of mortality associated with COVID-19 by 2.5 times[4].

It should be remembered that the SARS-CoV-2 virus penetrates cells through angiotensin-converting enzyme 2 (ACE2) membrane receptors, which are distributed in the heart, endothelial cells, lungs, intestines, and pancreas. When there is acute hyperglycemia, the expression of the ACE2 receptor is upregulated, favoring the entry of the virus into the cell, while in chronic hyperglycemia the cells lose their protective mechanism, becoming vulnerable to the proinflammatory effect of the virus. In this sense, it has been observed that diabetic patients with COVID-19 infection have a higher insulin requirement[5].

Pharmacological management for people with diabetes infected with COVID-19 should be governed by intensive glycemic surveillance and aggressive management against hyperglycemia. Hyperglycemia is a risk factor for the development of severe COVID-19. These patients will have significant hyperglycemia due to infection, inflammation, and stress stemming from the infection[6].

In countries where the prevalence of diabetes is very high[7] (table 1), the risk of favoring the association of diabetes and COVID-19 increases considerably and significantly complicates the evolution and prognosis of the patient. The lack of a specific treatment against COVID-19 and the medical difficulties to implement an adequate treatment in the seriously ill patient with diabetes and SARS-CoV-2 infection, The treatment of patients with diabetes and COVID-19 is essentially the same as recommended by the different health regulatory bodies; however, some clarifications should be made:

– If the patient is asymptomatic and maintains good glycemic control, the medical treatment is not modified and adequate follow-up of the patient is recommended.
– If the subject develops a mild or moderate infection, an adjustment of medical treatment is made, according to blood glucose concentrations.
– In patients with a severe infection, with dyspnea on moderate or slight exertion, low oxygenation,

pneumonia, complication of a comorbidity or requiring hospitalization, pharmacological and non-pharmacological treatment should be evaluated and the corresponding modifications made, for the best control patient's glycemic; the use of some type of insulin should always be an alternative[3].

In Mexico, the epidemiological process has followed a pattern similar to that observed in other countries, however, one of the characteristics of COVID-19 is the acceleration of contagion between people and the presence of relaxed measures that favor the spread of the coronavirus. This causes outbreaks and uncertainty in the processes of registration and estimation of the number of new cases, associated comorbidities, indicators of mortality, morbidity, direct hospitalization or associated with comorbidities. All this hinders the planning and implementation of the different health programs and has an impact on the incidence and prevalence of these diseases.

Undoubtedly, chronic diseases such as diabetes are complex and when they are associated with communicable diseases, the medical care of patients is further complicated. The challenge is to generate important changes in the health systems of the countries, considering the deficiencies in the different levels of medical care, especially in the first level. In addition, we must take into account the difficulties in acquiring health supplies, the delay in technological progress, the low level of education, poverty, geographic disparity, and economic and social risk factors.

In addition, given the great challenge of the pandemic, the participation of all those involved must be promoted: the patient, the primary caregiver, family members and health personnel. This to prevent infection in diabetic patients (hand hygiene, use of a mask, social distancing, timely vaccination), promote a healthy lifestyle (adequate food in quality and quantity, physical exercise, sleep quality, psychological support), have better control of the patient (appropriate weight for age and gender, access to medications and equipment to measure blood glucose, monitoring of blood pressure, cholesterol, triglycerides, glycosylated hemoglobin, renal, ophthalmic, and neurological function, avoiding or detecting adverse drug reactions), reduce the frequency of complications (diabetic nephropathy, neuropathy, myocardial infarction, diabetic foot), increase patient survival (timely and efficient contact with their doctors, hospitalization in specific cases and improve their quality of life such as physical, social emotional, material, and growth and development well-being). Continuing education in health, both for the patient, the primary caregiver and the health personnel is and will be an important pillar for slowing down this disease.

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