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ORIGINAL ARTICLE

LIFE HABITS OF PEOPLE WITH DIABETES MELLITUS DURING THE COVID-19 PANDEMIC

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ABSTRACT

Objective: to characterize the impacts of social distancing caused by the Coronavirus disease pandemic on the lives of people with Diabetes Mellitus.

Method: a descriptive study with a quantitative approach, carried out in Brazil from May to June 2020 with 102 patients with Diabetes Mellitus, through a virtual form, addressing sociodemographic, self-care and mental health issues. The association between the variables was assessed using the chi-square test ($p<0.05$).

Results: of the 45 (44.11%) individuals who stated eating poorly, 33 (32.35%) reported weight changes ($p=0.008$); in relation to mental health, 59 (57.84%) presented regular or bad conditions; with regard to consultations, 84 individuals (82.75%) indicated interruption or irregularity; of the 58 (56.86%) who stated socioeconomic losses, 37 (36.27%) had difficulties in adherence to inputs ($p<0.000$).

Conclusion: multi-professional measures must be focused on the factors that exert a negative influence on metabolic control, as well as on establishing remote care, to minimize the reduction in assistance.

DESCRIPTORS: Diabetes Mellitus; Coronavirus infections; Pandemic; Habits; Social Isolation.

HÁBITOS DE VIDA DE PERSONAS CON DIABETES MELLITUS DURANTE LA PANDEMIA DE COVID-19

RESUMEN:

Objetivo: caracterizar los impactos del distanciamiento social provocado por la pandemia de la enfermedad por Coronavirus en la vida de las personas con Diabetes Mellitus. Método: estudio descriptivo cuantitativo, realizado con 102 pacientes con Diabetes Mellitus, a través de un formulario virtual, con el abordaje de temas sociodemográficos, de autocuidado y de salud mental, en Brasil de mayo a junio de 2020. La asociación entre variables fue evaluada por la prueba de chi-cuadrado ($p<0,05$). Resultados: de los 45 (44,11%) que admitieron comer mal, 33 (32,35%) reportaron cambios de peso ($p=0,008$); con respecto a la salud mental, 59 (57,84%) expusieron condiciones regulares o malas; En cuanto a las consultas, 84 personas (82,75%) alegaron interrupción o irregularidad; de los 58 (56,86%) que declararon pérdidas socioeconómicas, 37 (36,27%) tuvieron dificultades en la adhesión de insumos ($p<0,000$). Conclusión: las medidas multiprofesionales deben centrarse en los factores que influyen negativamente en el control metabólico, así como en el establecimiento de cuidados a distancia, para minimizar la disminución de la atención asistencial.

DESCRIPTORES: Diabetes Mellitus; Infecciones por Coronavirus; Pandemia; Hábitos; Aislamiento Social.

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INTRODUCTION

The new coronavirus (SARS-CoV-2) is a newly emerged and highly contagious virus, which causes the Coronavirus disease (COVID-19) and invades the respiratory tract and lungs, leading to a new type of coronavirus pneumonia[1]. According to the Pan American Health Organization, in the Americas region alone, the number of confirmed cases in July 2020 already exceeded 3,868,569 million and, in Brazil, 2,292,286 million. Worldwide, this number exceeds 15,012,731 million people affected by the disease. The World Health Organization (WHO) reported that the number of deaths was 3.4% of the total infected, characterizing the seriousness of the pandemic that the world is facing[1].

There is a group of people who are considered more vulnerable to the disease caused by SARS-CoV-2, composed of older adults and by individuals who have pre-existing conditions, such as hypertension, cancer, cardiovascular diseases, and Diabetes Mellitus (DM)[1]. Such comorbidities increase the risk of developing more severe cases of COVID-19, in addition to a higher mortality risk[2-3]. It is known that, of the disease cases, 81% will be mild; 14%, severe; and 5%, critical[4].

When in contact with the new coronavirus, many individuals may experience mild symptoms of the disease or even be asymptomatic; however, patients with DM may need hospitalization more frequently to receive intensive care and interventions[4]. Although various studies show different numbers about lethality and morbidity in patients with COVID-19 and comorbidities, all of them indicate that people in this group are more likely to evolve to the severe and critical state of the disease.

In a study conducted with 138 patients, it was verified that 72% of the patients with COVID-19 and comorbidities, including DM, required intensive care, compared to 37% of the patients without comorbidities[5]. Another study, which included 1,099 patients in China, found that among the 173 with severe COVID-19 symptoms, 23.7% had hypertension, 16.2% DM, 5.8% heart disease and 2.3% cerebrovascular disease[6]. And in a third Chinese study, with 140 patients admitted to the hospital with COVID-19, 30% had hypertension and 12% had DM[7].

According to the Brazilian Diabetes Society (*Sociedade Brasileira de Diabetes,* SBD), in line with information from the Ministry of Health (*Ministério da Saúde*, MS), patients with DM belong to the COVID-19 risk group due to low immunity, linked to increased blood sugar. However, the SBD reports that patients with DM who have glycemic control through monitoring, adequate use of insulin or oral medication, balanced diet and physical activity, have an easier time facing COVID-19, that is, there is less risk for severe and critical cases of the disease[8].

In Brazil, due to the high risk of COVID-19, patients with DM (among other chronic diseases), older adults and pregnant women must remain socially distant, based on the MS recommendation (Ordinance No. 65/2020), including the possibility of distancing from their field of work, favoring the fulfillment of social distancing as a prevention measure against transmission. This measure highlights the importance of patients with DM respecting the SBD, MS and WHO recommendations in the prevention of SARS-CoV-2.

Taking into account that the changes resulting from this pandemic have the potential to directly impact on the life of DM patients, it was decided to research about their routine during this period, in order to characterize the impacts of the social distancing imposed by the coronavirus disease pandemic on the lives of people with DM.

METHOD

This is a descriptive study with a quantitative approach, carried out with people with DM over 18 years of age, this being the only inclusion criterion. The research took place during the months of May and June 2020, corresponding to part of the period of social distancing due to the COVID-19 pandemic. The population under study consisted of individuals with DM who are part of a national social media, called *Insulina sem Fronteiras* (Insulin without Borders). The choice of this social network for data collection was because it is part of the extension project that originated this research and for being made up of people eligible for the study.

The study participants were invited to voluntarily take part in the research through a post on the *Insulina sem Fronteiras* social media, hosted on Instagram® and Facebook®. Through posting the research on such networks, the individuals had access to the data collection instrument. Due to the need to maintain social distancing, approximation and data collection were carried out virtually, although respecting all the ethical principles of research with human beings.

The sampling was non-probabilistic and for convenience and it is worth noting that, as the invitation to the research was collective, there is no data on refusal to participate, and the sample size was reached automatically with the end of the time stipulated by the researchers for data collection.

Data collection was performed using the Google Forms tool by typing the data online, with objective and closed questions, which constituted the study variables. The form consisted of 20 questions, covering the sociodemographic dimension (gender, age and income), the dimension related to the treatment (monitoring of capillary blood glucose, use of medications, regular consultations and adherence to inputs) and the dimension of life habits (diet, physical activity and complementary activities for emotional balance) based on the Diabetes Self-Care Activities Questionnaire (DSAQ), translated, adapted and validated for the Brazilian culture[10]; in addition to the issue of the mental health conditions related to social distancing. All the answers were self-reported.

The questionnaire, available for two months on the social media, was accessed through a link, as well as the information on the research's ethical standards, and the answers were automatically grouped in a database and later organized in an Excel file for categorization and tabulation.

The statistical analysis, which was performed after the time established for data collection, comprised the descriptive analysis, through the distribution of the relative and absolute frequencies of the variables. The Chi-square test was performed for the inferential analyses of the associations between the following variables, outcome and independent, respectively: weight gain x diet; weight gain x physical activity; mental health condition x socioeconomic loss; mental health condition x news referring to the pandemic; mental health condition x carrying out complementary activities to balance the emotional state; adherence to inputs x socioeconomic losses, and adherence to inputs x number of daily checks of capillary blood glucose.

For all the inferential analyses, the following assumptions of the Chi-square test were respected: the data are selected at random; all the expected frequencies are greater than or equal to 1 and not more than 20% of the expected frequencies are below 5. For the variables analyzed by the Chi-square test in which the frequency in one of the classes was below 1, Yates' correction was used. For all the analyses, a statistical significance level of $p<0.05$ was considered. The valuesof the data presented in the discussion stage are rounded values of those described in the results stage.

The study was approved by the Research Ethics Committee, under opinion No. 1,884,837 of 04/31/2017, following ethical standards contained in Resolution 466/2012 of the National Health Council. Before starting data collection with the virtual questionnaire, a Free and Informed Consent Form (FICF) was introduced, consisting of a clarification page about the research, in addition to the authorization request for the use of the data.

RESULTS

A total of 102 individuals with DM participated in the study, with the following characteristics: 75 individuals diagnosed with Type II DM (73.53%), 50 female (49.02%) and a mean sample age of 41.8 years old. In relation to the characteristics of the pathology, especially those related to the use of insulin, we have the following: of the patients with Type II DM, 35 do not use insulin (34.31%), 25 use a syringe as insulin administration tool (24.51%) and, of the 38 individuals who use the insulin pen (37.25%), 21 have Type I DM (20.59%).

With the imposition of social distancing, the study aimed to investigate the presence of weight gain in individuals with DM, correlating this variable with the type of diet and also with the recurrent practice of physical exercises. In the absence of weight measurements, either due to lack of contact with the study subjects or to the difficulty in accessing a scale due to social distancing, the interviewees' self-perception regarding their weight was considered. Table 1 shows the association between weight gain and poor diet (p=0.008) and also with the deficit in physical exercises (p=0.03).

Table 1 - Influence of diet and physical activity on the increase in self-perceived weight of patients with Diabetes Mellitus, during the period of social distancing. Rio de Janeiro, RJ, Brazil, 2020

Variables	Presented weight gain		Did not present weight changes		p
	n	%	n	%	
Healthy diet					
Yes	27	26,47	30	29,41	0,008**
No	33	32,35	12	11,76	
Physical Activity					
Yes	7	6,86	12	11,76	0,030**
No	53	51,96	30	29,41	

**Chi-square Test

Source: The authors (2020).

Another aspect studied was the quality attributed by the interviewees to their mental health, considering that the period of social distancing could affect it, mainly as a consequence of the news related to the pandemic and, in some cases, with the socioeconomic losses that it imposed on the income of some of these individuals.

Table 2 shows the association between the quality of mental health and socioeconomic losses (p=0.011), the fact of watching the news related to the pandemic (p=0.001) and the act of carrying out complementary activities in order to attain emotional balance (p=0.000). In relation to these practices, 22 (21.56%) reported doing manual work (housekeeping, cooking, handicrafts, gardening), five (5.88%) reported using this time to study and read, 17 (16.67%) perform leisure activities (listening to music, playing video games, playing with their siblings, and 55 (55.89%) did not implement any activity.

Table 2 - Mental health conditions in relation to reduced income, news related to the pandemic, and carrying out complementary activities. Rio de Janeiro, RJ, Brazil, 2020

Variables	Good MH conditions		Regular MH conditions		Bad MH conditions		p
	n	%	n	%	n	%	
Reduction in income							
Yes	17	16,67	30	29,41	11	10,78	0,011**
No	26	25,49	13	12,75	5	4,90	
Being shocked when watching news about the pandemic							
Yes	26	25,49	39	38,24	15	14,71	0,012*
No	17	16,67	4	3,92	1	0,98	
Complementary activities (e.g.: yoga, sewing)							
Yes	28	27,45	16	15,69	1	0,98	0,001*
No	15	14,71	27	26,47	15	14,71	

MH: Mental Health *Chi-square test with Yates' correction. **Chi-square Test
Source: The authors (2020).

Due to the period of social distancing, 58 (56.86%) individuals reported that their income was affected. In addition to that, some of the interviewees reported difficulties in adhering to inputs (insulin vials, syringes, blood glucose checking materials, insulin pens and oral medications). Table 3 shows the association between the difficulty in adhering to the inputs and the income deficit (p<0.000) and the number of blood glucose checks per day (p=0.003), assuming that, with the lack of inputs, the number of daily checks is reduced.

Table 3 - Influence of reduced income on adherence to inputs and its consequence on the number of daily blood glucose checks. Rio de Janeiro, RJ, Brazil, 2020

Variables	Have difficulties in adherence to inputs		Do not have difficulties in adherence to inputs		p
	n	%	n	%	
Reduction in income					
Yes	37	36,27	21	20,59	<0,000*
No	4	3,92	40	39,22	
Frequency of blood glucose checks per day					
1x a day	8	7,84	13	12,76	0,001*
2x a day	11	10,78	7	6,86	
3x a day	2	1,96	6	5,88	
4x or more	14	13,73	9	8,82	
Does not check	5	4,90	27	26,47	

*Chi-square test with Yates' correction
Source: The authors (2020).

The regularity of the consultations was also investigated during the period of social distancing, and the data showed that 3 individuals (34.31%) reported interruption of the consultations, 49 (48.04%) stated that they were irregular, and 18 (17.65%) reported attending them regularly. Regarding the telecare appointments, 14 (13.7%) stated that they had consultations via WhatsApp®; six (5.9%), by video; 10 (9.8%), by telephone call; and 72 (70.6%) reported not having resorted to any type of telecare appointments during the period.

In relation to the use of supplements, after the beginning of the period of social distancing, 59 (57.8%) individuals reported starting the use of supplements as a supposed form of protection, among them: vitamin supplements, medications for increasing immunity, teas, vitamin C, Metformin Hydrochloride and Glibenclamide (believed to have described its treatment for DM) and Ivermectin. 43 (42.2%) individuals reported not using any type of supplement.

DISCUSSION

The sample analyzed in this study is designated corresponding to those indicated in other studies, considering the predominance of the female gender and of adults, as well as the prevalence of individuals with Type II DM[11-13].

Changes were detected during the period of social distancing, and body weight was increased. Through the inferential analyses, it is possible to identify an association between weight gain and inadequate diet (32% report not having adequate eating habits) and deficit in the practice of physical exercises (52% do not practice). A number of studies point out that, in Type II DM, overweight and obesity increase the incidence and severity of SARS-CoV-2[14-15].

Obesity is a known risk factor for abnormal ventilation and can contribute to the reduction of the functional residue of lung capacity[16]. In addition to that, it is necessary to underline that a number of research studies emphasize that weight gain, in this pandemic scenario, compromises the individuals' immunity against the response to the virus, and that the increase in mortality due to COVID-19 is greater in countries where the incidence of obesity is more prominent[14]. In order to minimize the risk, the recommendations during social distancing are the maintenance of regularity in the daily diet and in the practice of physical exercises at home[17].

In addition to the repercussions in the epidemiological scope, the new coronavirus also produces psychological, social and economic impacts that directly interfere in the population's life. The high level of unemployment associated with the recurrence of contract and working hours suspensions, and the low availability of labor offers due to the low performance of companies, causes the permanence of this situation[18]. In the analyzed sample, 57% of the individuals demonstrated suffering consequences from the socioeconomic loss resulting from the pandemic, according to the analysis carried out, associated with the difficulty in adhering to inputs for daily glycemic checks.

This finding can imply worse disease control, since glycemic monitoring is one of the pillars for good metabolic control and, in the period of the current pandemic, it has been recommended to be carried out rigorously in people with diabetes who have not yet been infected with COVID-19[19].

Continuing the issue of glycemic control, it was found that 32% do not perform the daily check, 21% do so only once a day, 18% twice a day, and 31% more than three times a day. These findings are in agreement with other studies that portray the self-monitoring of capillary glycemia[20]. The frequency pattern of blood glucose monitoring found in this

sample suggests precariousness of disease control, since a number of studies show that the HbA1c serum concentration was inversely proportional to the number of capillary blood glucose dosages through self-monitoring per day[21-22].

Even with few studies related to the research object, data observed in other infections (such as SARS-CoV-1 and H1N1 influenza) attested that patients with deficient glycemic control have a higher incidence of complications and death[17]. According to the SBD, it is indispensable to respect the recommendation of monitoring the glycemic dosage at different times of the routine: during fasting, after meals and before bedtime, in a number that varies from three to six times a day, for immediate actions correcting episodes of hypoglycemia or hyperglycemic peaks, avoiding possible complications[23].

The exacerbated media exposure about the growing percentage of people infected and killed by COVID-19, the rigor of social distancing and the financial losses are opportune for the triggering or worsening of psychological disorders, especially the anxiety and depression disorder, not contributing to the maintenance of mental health and the additional neglect of the physiological health. A study conducted in Ethiopia in April 2020 indicated a significant increase in the persistence of depression symptoms compared to data prior to the pandemic[24]. In this study, it is observed that a total of 78% were mentally shocked due to the common approach shown in the communication media. This fact can be maximized by the lack of professional support, since there was suspension of consultations in the studied population, some of which were replaced by telecare appointments, not inclusive of the entire population.

In order to alleviate psychological distress and for stress management in order to promote well-being, 44% of the individuals under study carried out complementary activities such as yoga, handicrafts, sewing, etc. The analysis indicates that there is a positive relationship between these complementary activities and the self-reported improvement in mental health. Such effects are in line with research studies that prove beneficial results related to performing practices such as yoga, acting in the improvement of well-being and of quality of life, reducing anxiety and depression symptoms[25].

Regarding the absence of consultations, mentioned above, 34.3% reported total interruption of the consultations with health professionals. This scenario of suspension or irregularity in the consultations with health professionals led to the rise of telecare appointments, "considered as an effective alternative to face-to-face visits by patients with other health care needs, helping to preserve the services for those who most need personal care"[26:12]. However, this technological innovation adapted to the period of social distancing did not reach part of the subjects of this study, since 71% of the sample did not perform any type of digital appointments.

Such personal or virtual distancing from the health professionals favors cases of self-medication, since there is concern among the individuals with the improvement of immunity as a way of prevention against the circulating virus. The data analyzed show that, as a result of this concern, 58% started using some medication; of these, 27.5% used vitamin C, which, despite the historical contradictions of the researchers, seems to exert a potential level of prevention against pneumonia and against the evolution to a worsened condition due to COVID-19[27].

Some limitations in this study are evidenced by the difficulty in obtaining national research studies, which hinders discussion, since articles with study subjects from cultures distant from the Brazilian, such as Asians, are based on different cultures, customs, habits and characteristics.

FINAL CONSIDERATIONS

Through the study, it was evidenced that, during the period of social distancing, DM patients presented weight gain associated with poor diet and deficit of physical activity. They presented economic losses, which reflected in low adherence to the inputs that aid in the treatment of DM, which impaired glycemic monitoring. Mental health state was also negatively impacted, specifically by the news of the pandemic in the communication media. Social distancing influenced the professional consultations, making them irregular or absent. In this sample, telecare appointments were not frequent.

The COVID-19 pandemic represents an unprecedented adversity for patients with DM. Even with the reduction in the number of cases in some countries, for the population segment that makes up the risk group – such as these patients – social distancing will still be a reality for an indefinite period of time.

Knowing the characteristics of this population, considered a risk group for COVID-19, as proposed in this study, is important for the development of more optimized and specific health education practices. To face the problems encountered by individuals with DM, the multidisciplinary team that assists them must focus its attention on factors that are negatively influencing metabolic control, such as weight gain and impaired glycemic monitoring.

It is worth mentioning that the implementation of remote care strategies can be a solution, at this moment, for people with DM to continue to have professional support for the physical and mental demands that arise in the midst of the pandemic.

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