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Resilience of people with diabetes mellitus during the COVID-19 pandemic

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Resiliência de pessoas com diabetes mellitus durante a pandemia da COVID-19

Resiliencia de personas con diabetes mellitus durante la pandemia del COVID-19

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ABSTRACT

Objective: To analyze the resilience of people with diabetes mellitus during the COVID-19 pandemic.

Method: Cross-sectional study carried out with 235 people with diabetes using a form shared on social media with sociodemographic and clinical data and the Connor-Davidson resilience scale validated for the Brazilian context. Scale scores were compared with sociodemographic and clinical data using Student's t-test, analysis of variance and Mann-Whitney.

Results: The mean score on the resilience scale was 63.58+14.5. The highest resilience scores were evidenced in men, people with higher income, higher education, users of oral antidiabetics, who had healthy diet and who performed physical activity and follow-up with the health team.

Conclusion: Mean resilience was lower than the score shown in the literature and groups with higher scores had better health behaviors.

Keywords: Diabetes mellitus. COVID-19. Resilience, psychological. Disease prevention. Patient care team. Mental health. Nursing.

RESUMO

Objetivo: Analisar a resiliência de pessoas com diabetes mellitus durante a pandemia da COVID-19.

Método: Estudo transversal realizado com 235 pessoas com diabetes por meio de um formulário compartilhado em mídias sociais com dados sociodemográficos e clínicos e a escala de resiliência de Connor-Davidson validada para o contexto brasileiro. Os escores da escala foram comparadas com dados sociodemográficos e clínicos pelos testes t de Student, análise de variância e Mann-Whitney.

Resultados: A pontuação média da escala de resiliência foi 63,58+14,5. Os maiores escores de resiliência foram evidenciados em homens, pessoas com maior renda, maior escolaridade, usuários de antidiabéticos orais, que tinham alimentação saudável e que realizavam atividade física e acompanhamento com a equipe de saúde.

Conclusão: A média da resiliência foi inferior ao escore evidenciado na literatura e os grupos com escores mais altos tinham melhores comportamentos de saúde.

Palavras-chave: Diabetes mellitus. COVID-19. Resiliência psicológica. Prevenção de doenças. Equipe de assistência ao paciente. Saúde mental. Enfermagem.

RESUMEN

Objetivo: Analizar la resiliencia de las personas con diabetes mellitus durante la pandemia de COVID-19.

Método: Estudio transversal realizado con 235 personas con diabetes a través de un formulario compartido en redes sociales con datos sociodemográficos y clínicos y la escala de resiliencia de Connor-Davidson validada para el contexto brasileño. Las medias de las escalas se compararon con datos sociodemográficos y clínicos mediante la prueba t de Student, análisis de varianza y Mann-Whitney.

Resultados: La puntuación media en la escala de resiliencia fue de 63,58+14,5. Los puntajes más altos de resiliencia se evidenciaron en hombres, personas con mayor nivel económico, mayor escolaridad, usuarios de antidiabéticos orales, que tenían una dieta saludable y que realizaban actividad física y seguimiento con el equipo de salud.

Conclusión: La resiliencia media fue inferior a la puntuación mostrada en la literatura y los grupos con puntuaciones más altas tuvieron mejores comportamientos de salud.

Palabras clave: Diabetes mellitus. COVID-19. Resiliencia psicológica. Prevención de enfermedades. Grupo de atención al paciente. Salud mental. Enfermería.

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INTRODUCTION

Living with chronicity and coping with adverse conditions, such as the pandemic, require the use of individual and social resources, aiming at a positive adaptation. Thus, resilience emerges as a possibility of better adjustment to illness and adversity, since its definition involves a process of positive adaptation when the situation is challenged by a threatening context, of severe adversity or prolonged trauma[1,2].

It is known that the population's socioeconomic aspects influence health indicators, however resilience is culturally influenced and has little relation to the country's socioeconomic conditions. Even in the face of a situation of serious social and health inequality, Brazilians showed higher levels of resilience than the inhabitants of countries with better economic and health care conditions[1].

The emergency measures to control the Coronavirus Disease 2019 (COVID-19) consisted of closing schools, reducing transport and leisure services, restricting outdoor activities, as well as canceling elective consultations. This context made it difficult to monitor chronic diseases, such as diabetes mellitus (DM), which require frequent tests and consultations, daily discipline for self-management, in addition to being worsened by the sedentary lifestyle and stress imposed by restrictions[3]. Thus, significant changes in the lives of people with diabetes are observed, and it is important to understand the psychosocial factors in this context.

Faced with the changes imposed by the pandemic, individuals with DM had to develop mechanisms to overcome adversities. In this context, resilience is directly linked to self-efficacy, defined as the confidence to overcome new challenges with one's own skills, whose success is motivated by health education in search of behavioral change and maintenance of healthy habits. Nurses are responsible, together with the multiprofessional team, of motivating the individual with DM for self-care, providing information that guarantees independence[4]. In this context, an observational study conducted in Florianópolis identified a significant association between resilience and self-care in DM. Therefore, the importance of considering resilience in nurses' clinical practice for health promotion is confirmed[5].

Considering that (i) resilience improves adjustment to the disease in the face of adversity, (ii) the pandemic is capable of aggravating the psychosocial implications of individuals with DM, and (iii) resilience is associated with behaviors related to self-care, the following question emerged: How is the resilience of people with diabetes during the COVID-19 pandemic?

The analysis of the resilience of people with DM during the COVID-19 pandemic is important to understand the impact of this context on individuals with DM and identify which characteristics are associated with greater resilience. Thus, it will be possible to develop strategies and cognitive-behavioral interventions for the optimization of coping, autonomy and empowerment, besides the development of skills to perform the care required in DM and adequate self-management. Thus, the objective was to analyze the resilience of people with diabetes mellitus during the COVID-19 pandemic.

METHOD

Type of study

This is a quantitative, descriptive and cross-sectional study, guided by the guidelines of the tool Strengthening the Reporting of Observational Studies in Epidemiology (STROBE), developed to promote the quality and transparency of observational studies (case-control, cohort and cross-sectional)[6].

Research location

The research was conducted in a virtual environment using Google® Forms.

Population and sample and selection criteria

The research participants were individuals diagnosed with DM, at least six months of disease, of both sexes, aged > 18 years, who had access to the internet and who accepted the terms to share anonymous and untraceable responses. Participants who did not complete the resilience assessment scale were excluded. The sampling technique was by convenience according to the number of people who showed interest in participating in the research during the data collection period. A total of 239 forms were responded, four of which were excluded because they did not meet the selection criteria. Therefore, the sample was defined in 235 participants.

Period and strategy of data collection

The data were collected from September 18 to 30, 2020. The data collection instrument was sent to specific support groups for people with DM on the social networks WhatsApp® and Facebook®, in which a link was made available for Google® Forms. The link was resent to these groups once a week, during the collection period, as a reminder and incentive for people to respond. Those interested in answering the form were directed to an electronic page where the Free

and Informed Consent Form (FICF) was available for upload. Participants were informed about the title of the research, objectives, justification, risks and benefits and could mark or not the voluntary acceptance of the research.

After voluntary acceptance, the data collection form was made available for completion and consisted of multiple-choice questions with self-reported sociodemographic and clinical data such as: age, gender, state of residence, education level, income, work activity, type of diabetes, time of diagnosis, presence and types of comorbidities and/or complications, last glycated hemoglobin, glycemic monitoring, healthy diet, physical exercise and follow-up with health professionals.

To assess the resilience, it was used the Connor-Davidson Resilience Scale for Brazil (RISC-BR), developed by Connor and Davidson (2003)[7] and validated for Portuguese by Solano *et al.* (2016)[8], with Cronbach's alpha of 0.93 and an intraclass correlation coefficient of 0.86[8]. It is an instrument composed of 25 items distributed in four dimensions called "Tenacity", "Tolerance to Adaptability", "Support" and "Intuition". The answers are displayed on a Likert scale from zero ("not true") to four ("true almost every time") and respondents should indicate the value that best fits their life experiences.

The score can range from 0 to 100 points and higher scores reflect greater resilience[7,8]. The instrument does not classify divisions between low, medium and high resilience.

Data analysis

Data were tabulated in an Excel® spreadsheet with double verification and presented in tables with absolute and relative frequencies, means and standard deviations (± SD). Data were analyzed using the Statistical Package for the Social Sciences® (SPSS) 20. Data normality was verified by the Kolmogorov-Smirnov test and equality of variances by the Levene's test. Scale means were compared with sociodemographic and clinical data using Student's t-test, Mann-Whitney, ANOVA and Games-Howell test. Results were considered significant when $p \leq 0.05$.

Ethical aspects

The study obtained a favorable opinion from the National Research Ethics Commission, under number 4,073,466 and Certificate of Presentation for Ethical Appreciation (CAAE) 31014820,4,0000,5040, and complied with the norms and guidelines for conducting research involving human beings, according to Resolution 466/12, of December 12, 2012, of the National Health Council. The research participants marked the option of voluntary acceptance of the research in the online format and the FICF was available for upload.

RESULTS

From the 235 participants, 85.5% were female, 35.3% were between 27 and 38 years old (mean = 31.7+12.0). With regard to marital status and religious practice, 53.6% had partners (married or stable union) and 83% practiced some religion, being these 48.5% Catholics, 17.9% Evangelicals and 11.9% Spiritualists. It was observed that 54% of respondents were from the Southeast region of Brazil, 64.7% from capitals and metropolitan regions (Table 1).

Regarding work activity, the majority (86%) had an employment, of which 38.3% worked from home office by institutional determination due to the risk of illness, 25.5% continued to work normally, 4.2% lost employment due to the pandemic and 21.7% were unemployed.

The mean score on the resilience scale was 63.58+14.5, ranging from 5 to 96. Men ($p=0.033$), people with higher income ($p=0.003$) and higher education ($p<0.001$) had higher scores on the resilience scale (Table 1).

Regarding clinical characteristics, type 1 diabetes predominated (81.3%) followed by type 2 (11.5%), absence of comorbidities (56.1%) and complications (71.4%). Hypertension (20%), overweight/obesity (14.5%) and dyslipidemia (9.8%) were the most prevalent comorbidities, while retinopathy (19.6%), neuropathy (13.6%) and nephropathy (3.4%) were the most common complications.

Almost all (99.14%) of the participants were undergoing drug treatment (oral antidiabetics, GLP-1 antagonists or insulin), 92.2% of which were on insulin therapy. Two people indicated physical exercise as a non-pharmacological treatment. Higher scores on the resilience scale were observed among people using oral antidiabetics as drug treatment (68.50+13.7; $p=0.016$). Type of diabetes, comorbidities and complications were not statistically significant (Table 2).

Regarding health behaviors related to diabetes, 97.8% of the respondents performed glycemic monitoring with a median of 5.0 and a range from 0 to 11 measurements per day. More than half (54%) were monitored by health team, 28% by telemedicine (Table 3). The mean glycated hemoglobin (HbA1c) was 7.32 +1.54, ranging from 4.7 to 12.7.

The comparison of means showed that an increase in the CD-RISC scale score was associated with better health behaviors, such as healthy diet ($p=0.001$), physical exercise ($p=0.014$) and follow-up with health team ($p= 0.011$). There was no difference in the resilience score according to marital status and work activity.

Table 1 – Comparison of the mean resilience of individuals with diabetes mellitus (N=235), according to sociodemographic characteristics. Fortaleza, Ceará, Brazil, September 2020

Variables	n	%	Mean ±SD	p
Total Resilience Scale			63.58±14.57	
Gender (N=235)				**0.033**†
Female	201	85.5	62.75±14.3	
Male	34	14.5	68.50±15.0	
Age (N=235)				0.279*
18 ├— 24	40	21.3	61.95±12.9	
25 ├— 34	61	35.3	61.13±16.3	
35 ├— 44	75	28.1	65.12±13.2	
45 ├— 87	59	11.5	65.27±15.0	
Marital status (N=235)				0.288†
With partner	126	53.6	64.52±14.9	
No partner	109	46.4	62.50±14.1	
Religion (N = 233)				0.526†
Yes	195	83.7	63.69±13.59	
No	38	16.3	62.05±18.8	
Income (Minimum Wage‡) (N=210)				**0.003***
Up to 2	49	23.3	56.86[a]±17.4	
3 – 4	56	26.7	62.75[ab]±13.0	
5 – 6	46	21.9	66.02[b]±13.7	
7 or +	59	28.1	66.31[b]±12.6	
Education level (N=235)				**<0.001***
Postgraduate	98	41.7	66.41[b]±14.5	
Higher education	82	34.9	65.48[b]±11.5	
Up to high school	55	23.4	55.73[a]±17.4	
Work (N=235)				0.614†
Yes	202	86	63.78±15.0	
No	33	14	62.39±11.6	

Source: Research data, 2020. *ANOVA; by the Games-Howell test equal letters, equal means and different letters, different means; †Student's t;‡Currently Minimum Wage: BRL 1,045.00, Brazil, 2020.

Table 2 – Comparison of the mean resilience of individuals with diabetes mellitus (N=235), according to clinical characteristics. Fortaleza, Ceará, Brazil, September 2020

Variables	N	%	Mean ± SD	
Type of diabetes (N=233)				0.071*
Type 1	191	82	63.64±14.2	
Type 2	27	11.6	67.41±13.2	
LADA	15	6.4	56.60±19.6	
Pharmacological Treatment (N= 232)				**0.016***
Oral antidiabetics	18	7.8	68.50±13.7	
Insulin	214	92.2	63.18±14.5	
Comorbidities (N=235)				0.461†
No	132	56.2	62.96±14.1	
Yes	103	43.8	64.38±15.1	
Complications (N=235)				0.458†
Yes	67	28.5	62.46±16.0	
No	168	71.5	64.03±13.9	

Source: Research data, 2020. LADA: Latent Autoimmune Diabetes in Adults. *ANOVA; †Student's t.

Table 3 – Comparison of the mean resilience of individuals with diabetes mellitus (N=235), according to health behaviors. Fortaleza, Ceará, Brazil, September 2020

Variables	n	%	Mean	p
Blood glucose monitoring (n=235)				0.770 ‡
Yes	230	97,8	63.57±14.6	
No	5	2,1	64.4±14.2	
Monitoring type (n=230)				**0.002***
Capillary blood glucose	125	54.4	60.44[a]±15.2	
Sensor	21	9.1	66.81[b]±14.1	
Both	84	36.5	67.4[b]±12.6	

Table 3 – Cont.

Variables	n	%	Mean	p
Treatment support (N=232)				0.781[†]
Yes	149	64.2	63.83±14.2	
No	83	35.8	63.27±15.3	
Healthy diet (n=235)				**<0.001***
Always	43	18.3	67.86[b]±15.5	
Almost always	123	52.4	65.33[b]±65.33	
Sometimes	48	20.4	59.33[a]±15.5	
Almost never	21	8.9	54.33[a]±17.2	
Physical Exercise (n=230)				**0.014***
7 times/week	12	5.2	58.50[a]±19.9	
5 to 6 times/week	26	11.3	68.12[b]±10.6	
3 to 4 times/week	54	23.5	68.15[b]±13.4	
1 to 2 times/week	60	26.1	63.47[a]±14.1	
None	78	33.9	60.71[a]±14.8	
Follow-up with health team (n=235)				**0.011***
Telemedicine	66	28.1	67.15+13.9	
In-person	121	51.5	63.48+13.5	
None	48	20.4	58.94+16.6	

Source: Research data, 2020; *ANOVA; by the Games-Howell test equal letters, equal means and different letters, different means; †Student's t; ‡Mann-Whitney.

DISCUSSION

The research results point out that most participants were female (85.5%) and married or in a stable relationship (53.6%), similar to a cross-sectional study conducted in João Pessoa-PB, that correlated the well-being and resilience in people with diabetes mellitus (82.7% female; 56.7% married) [9]. In the present research, men (p=0.033), people with higher income (p=0.003) and higher education level (p=0.001) had a higher resilience score, corroborating a study conducted in Israel during the pandemic, which showed worst indicators of psychological distress in women and the unemployed [1].

Diabetes grant a threefold increase in the risk of unfavorable outcomes in relation to COVID-19 (hospitalization, admission to the Intensive Care Unit, intubation and death) compared to individuals without DM[10]. This highlights the importance of patients maintaining continuous treatment and healthy behaviors. In the present research, it was observed

that people with higher resilience scores had a healthy diet (p=0.001), regular physical exercise (p=0.014) and regular follow-up with health professionals (p=0.011).

The unusual situation experienced by the pandemic influences mental health, causing stress, which can increase reward system responses, resulting in greater consumption of energy, sugar and alcohol. Moreover, social distancing generated limited access to stores and an impact on family income, for this reason, it was difficult to buy fresh food, favoring a reduction in the intake of fruits and vegetables[11].

A study carried out during the pandemic with students from Asia, Europe and North America showed that individuals with greater resilience had less stress and less undesirable eating behaviors[11], confirming the findings of the present study, whose results show that 70.7% of the people reported always or almost always following a healthy diet, a behavior present in individuals with higher resilience scores (p=0.001).

Social distancing measures have resulted in the closure of gyms and sports centers. In view of this, the limited space of households and the lack of technical knowledge for the practice of physical activity contributed to a sedentary lifestyle. About 60% of the participants reported not following the recommendation to perform physical activity at least three times a week during the pandemic, corroborating the results of an observational study conducted in the city of Teresina, Brazil, before the pandemic, which also verified a sedentary lifestyle (46.5%)[12]. Social distancing measures hindered the practice of physical activity in individuals with diabetes, this fact has impaired glycemic control, weight loss and corroborates the increase in insulin resistance[13].

Given the concern about the negative impact of social distancing on chronic diseases, a cross-sectional research carried out in southern India evaluated the psychosocial effects of social distancing on individuals with T2DM. The study identified that the time spent during lockdown was predominantly, in visual and digital media, for searching information about COVID-19, entertainment and personal communication. However, adherence to physical activity and healthy diet remained unchanged after the pandemic. On the other hand, participants who had poor glycemic control were predominantly sedentary, anxious and had an unhealthy diet[14].

In the city of Florianópolis, Brazil, an investigation was conducted with 362 people, aiming at the association between resilience and self-care of people with DM treated in Primary Health Care. There was an association between people with greater resilience and adherence to non-pharmacological and pharmacological treatment, especially in relation to the adoption of healthy diet and insulin administration (p<0.05)[15]. These findings corroborate those of the present research, since participants with higher resilience scores were those who had the best health behaviors associated with adherence to non-pharmacological treatment, such as healthy diet (p=0.001) and physical exercise (p=0.014*).

Higher resilience scores were found in those undergoing treatment with oral antidiabetic drugs (OAD) (p=0.016) and who performed glycemic monitoring (p=0.031), which can be explained by the fact that the use of OAD requires less dedication, in addition to presenting less discomfort in patients when compared to the use of insulin[16]. Beyond that, many participants used continuous insulin monitoring sensors associated or not with capillary blood glucose (44.6%). The use of technology facilitates treatment with DM, providing comfort and practicality in monitoring[16].

Another cross-sectional study, carried out in China, showed that there is a significant association between self-care and resilience, which favored the control of HbA1c[17]. The mean of glycated hemoglobin was 7.34+1.53%, ranging from 4.7 to 12.7, which shows an important variability.

More than half of the study participants (64.2%) reported receiving family help in the treatment of diabetes, but there was no difference in the resilience score. However, resilience has been associated with family support. The presence of a partner influences adherence to treatment, highlighting the family environment as a stimulus for self-care[14].

A study that used the CD-RISC to analyze resilience in people with DM found a mean score of 79.8 (SD=12.9), reinforcing that people with DM have high resilience scores, very close to healthy people[5]. Another study conducted in the southwest of the State of Bahia, Brazil, with women with T2DM found a mean CD-RISC score of 79.48[18], values slightly above the present investigation (63.58+14.57).

Another group that presented a higher resilience score was the one that had follow-up by the health team (p=0.034). Although it has highlighted health inequalities in the world, the pandemic worked as a booster of technological innovations, such as the expansion of telehealth and the sharing of data from devices[19]. However, only 28.1% of the research participants performed remote service and 51.5% continued using in-present service. Access to services without the need for physical presence reduces the anxiety of those at risk[19].

The role of health professionals was highlighted during the pandemic, especially with regard to health education, as people are more sensitive to negative information. There was a lot of false information that promoted health risk behaviors. Access to fake news and the excess of repetitive and unnecessary information in the news related to the

pandemic promote anxiety. Therefore, it is essential that health professionals play the role of health educators, guiding the population according to the most recent scientific evidence, informing society about self-care[19].

Nurses must know the strategies that favor their role as a health educator, so the professional must look for evidence-based strategies to improve their clinical practice. A double-blind randomized clinical trial, carried out in Iran, examined the effects of resilience training on self-efficacy in T2DM, that is, on the belief that one can successfully perform certain activities and expect good results. The skills worked in the intervention group included the acquisition of self-knowledge, problem solving, anger control, coping with stress, positive thinking and optimism, and significance was proven between these skills and resilience in T2DM patients[20]. Therefore, innovative strategies such as resilience training should be incorporated into traditional diabetes education to promote DM self-care.

CONCLUSION

It was concluded that the mean resilience of the research participants was lower than the score pointed out in other studies that addressed the same scale in individuals with DM. The scenario of uncertainty experienced in the COVID-19 pandemic can contribute to unfavorable psychological outcomes. The groups with the highest resilience scores were: male, higher income, education level and treatment with the use of oral antidiabetics. In addition, the highest resilience scores were found in individuals with healthy diet, physical exercise and follow-up with health team. Therefore, it is necessary to invest in technologies that foster resilience to promote favorable health outcomes.

Among the limitations of the study, stands out the pandemic context that limits access to research fields and, in view of this, the present research includes only people with internet access; the consideration of self-report; the scarcity of studies on the application of the CD-RISC scale adapted to the Brazilian cross-cultural context and the lack of studies on the psychological outcomes of the pandemic in specific groups. Moreover, the cross-sectional study design does not allow more in-depth causal analyses.

The results of the present research contribute to nursing and health care, as aspects related to mental health influence health behaviors that are determinant for the success of DM treatment. Therefore, nurses must be aware of risk factors that predispose to low resilience and, consequently, negative health behaviors. The originality and innovation of the research are highlighted by the absence of studies that address the CD-RISC scale in diabetics in the current scenario.

In view of the above, the study points out with greater emphasis the need for nurses to understand the influence of the current context on the mental health of this public, since the DM is a risk group for the worsening of COVID-19, with the objective of basing the planning of therapeutic strategies that increase resilience, consequently promoting health. It is necessary to encourage studies that describe such outcomes in society and in specific comorbidities, such as diabetes, and the creation of proposals for interventions to the promotion of resilience.

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