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Impact of stress, anxiety, and depression on the resilience of people with diabetes mellitus

Impacto del estrés, la ansiedad y la depresión en la resiliencia de las personas con diabetes mellitus

Impacto do estresse, ansiedade e depressão na resiliência de pessoas com diabetes mellitus

Julia Estela Willrich Boell[1*]
ORCID: 0000-0001-5956-9590
Denise Maria Guerreiro Vieira da Silva[1]
ORCID: 0000-0003-2139-083X
Juliana Cristina Lessmann Reckziegel[1]
ORCID: 0000-0003-4747-4038
Maria Elena Echevarría Guanilo[1]
ORCID: 0000-0003-0505-9258
Betina Hörner Schlindwein Meirelles[1]
ORCID: 0000-0003-1940-1608
Priscila Juceli Romanoski[2]
ORCID: 0000-0002-4494-9897
Cecilia Arruda[3]
ORCID: 0000-0002-8301-0495

[1]Universidade Federal de Santa Catarina. Santa Catarina, Brazil.
[2]Secretaria Municipal de Saúde de Florianópolis. Santa Catarina, Brazil.
[3]Hospital Universitário Professor Polydoro Ernani de São Thiago. Santa Catarina, Brazil.

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***Corresponding author:**
julia.boell@ufsc.br

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Abstract

This study aimed to verify the association between stress, anxiety, depression, and resilience in people with diabetes mellitus (DM) treated in primary health care in a municipality in southern Brazil. This was a cross-sectional study with people with DM treated in primary health care in a municipality in Southern Brazil. Data collection included sociodemographic and clinical questionnaires, and measures of stress, anxiety, depression, and resilience. Descriptive analyses and bivariate correlations were performed. A total of 362 people participated, 64% female, with a mean age of 62.4 years (SD 11.5). Hypertension was reported by the majority (68%). The mean duration of diabetes was 11 years (SD 10.2) and 21% reported the presence of complications related to the disease. Moderate inverse correlations were observed between resilience and stress (r = -0.531); resilience and depression (r = -0.570) and resilience and anxiety (r = -0.436). The findings of this study indicate the importance of exploring resilience as part of health care and the need to consider the inclusion of the psychosocial factors studied here: stress, anxiety, and depression, by health professionals, and more specifically as part of nursing care.

Descriptors: Diabetes Mellitus; Resilience, Psychological; Health Care; Nursing; Nursing Care.

Resumén

El objetivo fue verificar la asociación entre estrés, ansiedad, depresión y resiliencia en personas con diabetes mellitus (DM) atendidas en la atención primaria de salud en una ciudad del sur de Brasil. Estudio transversal con personas con DM atendidas en atención primaria de salud en una ciudad del sur de Brasil. La recolección de datos incluyó cuestionarios sociodemográficos y clínicos, medidas de estrés, ansiedad, depresión y resiliencia. Se realizaron análisis descriptivos y correlaciones bivariadas. Participaron 362 personas, 64% mujeres, con una edad media de 62,4 años (DE 11,5). La mayoría (68%) informó hipertensión. La duración promedio de la diabetes fue de 11 años (DE 10,2) y el 21% refirió la presencia de complicaciones relacionadas con la enfermedad. Se observaron correlaciones inversas moderadas entre resiliencia y estrés (r = -0,531); resiliencia y depresión (r = -0,570) y resiliencia y ansiedad (r = -0,436). Los hallazgos de este estudio indican la importancia de explorar la resiliencia como parte de la atención a la salud y la necesidad de considerar la inclusión de los factores psicosociales aquí estudiados: estrés, ansiedad y depresión, por parte de los profesionales de la salud, y más específicamente como parte de la atención a la salud.

Descriptores: Diabetes Mellitus; Resiliencia Psicológica; Atención a la Salud; Enfermería; Atención de Enfermería.

Resumo

Objetivou-se verificar a associação entre estresse, ansiedade, depressão e a resiliência em pessoas com diabetes mellitus (DM) atendidas na atenção primária da saúde de um município do Sul do Brasil. Estudo transversal com pessoas com DM atendidas na atenção primária à saúde em um município do Sul do Brasil. A coleta de dados incluiu questionários sociodemográficos e clínicos, medidas de estresse, ansiedade, depressão e resiliência. Foram realizadas análises descritivas e correlações bivariadas. Participaram 362 pessoas, 64% sexo feminino, com idade média de 62,4 anos (DP 11,5). A hipertensão foi relatada pela maioria (68%). A duração média do diabetes foi de 11 anos (DP 10,2) e 21% relataram a presença de complicações relacionadas à doença. Foram observadas correlações inversas moderadas entre resiliência e estresse (r = -0,531); resiliência e depressão (r = -0,570) e, resiliência e ansiedade (r = -0,436). Os achados deste estudo indicam a importância de explorar a resiliência como parte dos cuidados em saúde e a necessidade de considerar a inclusão dos fatores psicossociais aqui estudados: estresse, ansiedade e a depressão, pelos profissionais de saúde, e mais especificamente como parte do cuidado de enfermagem.

Descritores: Diabetes Mellitus; Resiliência Psicológica; Atenção à Saúde; Enfermagem; Cuidados de Enfermagem.

Introduction

Diabetes Mellitus (DM) has been considered a health threat, with an alarming incidence of cases, affecting approximately 537 million people worldwide. It presents high morbidity and mortality and risk of developing acute and chronic complications, being pointed out as one of the main causes of serious complications such as renal failure, retinopathy, cardiovascular diseases, coronary artery disease, and lower limb amputation[1].

Diabetes, despite being the subject of much scientific research, remains a challenge in terms of its control, which involves more than the use of medications and technological devices, as it requires behavioral changes linked to a person's decision. Accepting these changes is not always easy, since it also implies changes in daily life and in the way, people organize their lives, even when the disease and its progress are not visible[1].

In the search for options to help people better deal with their condition, we see in the construct of resilience the possibility of promoting better coping with the development of skills that favor the provision of the necessary care for better control of the disease. Resilience is a construct with current research in the areas of health and nursing. In the area of health, the focus of resilience has been especially on traumatic situations and, more recently, on studies with people with chronic health conditions[2,3].

It is considered the ability that a person must overcome adverse events and react positively to unusual situations that generate physical, psychological, and emotional discomfort[2,4].

In this context, psychosocial and behavioral factors, such as stress and anxiety, affect diabetes control by influencing behavior toward adherence to self-care and, consequently, increasing the risk of complications[5]. In addition to these factors, living with DM may be related to the onset of depression, since it requires restrictive changes in lifestyle habits to control the disease. In addition, people with DM who have depression have low adherence to treatment, lack of glycemic control, and increased complications[6]. Greater exposure to the aforementioned factors is related to less resilient people, with inappropriate behaviors when treating the disease[3], resilience assessment can be used to gather information for behavioral interventions.

Therefore, understanding how these factors – stress, anxiety, and depression – influence the resilience of people with diabetes can bring relevant contributions to the practice of health professionals, especially nurses, who can promote adherence to treatment for people with DM.

In this sense, promoting resilience in this population can be an important tool, reflecting positive effects on psychosocial factors, mitigating the disease, and providing better self-care behaviors and quality of life for those living with DM.

Thus, the objective of the study was to verify the association between stress, anxiety, depression, and resilience in people with DM treated in Primary Health Care (PHC) in a municipality in southern Brazil.

Methodology

This is a quantitative, cross-sectional, observational study with an intentional sample. The population consisted of people with DM who were treated in the PHC from December 2015 to May 2016 in the city of Florianópolis, Santa Catarina. The city had 49 Health Centers (HCs) divided into five Health Districts (HDs). Two HCs from each HD were intentionally selected for the study, using the criterion of the highest number of people with DM treated in the HCs.

Access to the CSs was initially carried out by contact via telephone with the person responsible for the HC management and, subsequently, a meeting was scheduled to detail the objectives of the project and explain the development. According to data from the Planning Department of the Municipal Government of Florianópolis, between the period of September 1, 2014, and August 30, 2015, 6,251 services for people with DM were recorded in the HCs, and from this data the study sample was calculated, through the Sestatnet® website[7], with a 95% confidence interval, which indicated a minimum sample of 362 people.

The study included individuals with a medical diagnosis of DM established one year ago, registered and treated at an HC in the municipality, being men and women over the age of 18. Individuals who did not achieve the minimum score in the cognitive assessment test of the Mini-Mental State Examination were excluded from the study, carried out due to the need for the participant to have an adequate cognitive level to answer the questionnaires, considering the cutoff point of 23/24 points for people with education and between 19/20 points for those without education.

Data collection was performed by the first author of the study and seven collectors were previously trained in the standardized application of the study instruments. Access to people with DM occurred in the waiting room of the HCs, where participants were approached and invited to participate in the study. For those who accepted and met the inclusion criteria, an interview was scheduled, at the HC or home, according to the participant's wishes and after signing the Free and Informed Consent Form.

The interview consisted of the application of a sociodemographic questionnaire (age, gender, religion, marital status, education, economic activity, and monthly family income) and health conditions (time since diagnosis of the disease, presence of high blood pressure, presence of complications of the underlying disease). Regarding the variable monthly family income, eight people did not feel comfortable declaring their family income. To assess the variables resilience, stress, anxiety, and depression, the following scales were selected:

Resilience Scale

Resilience was assessed using the Connor and Davison Resilience Scale[8], through the version validated for the Brazilian population[9]. It presents 25 items, on a Likert scale with responses ranging from “not at all true” (zero) to “almost always true” (four), with scores ranging from zero to 100 points, with high values indicating high resilience. The scale has satisfactory psychometric properties, allowing us

to distinguish between people with greater and lesser resilience.

Stress Scale

Stress was assessed using the Perceived Stress Scale[10], translated and validated for the Brazilian reality[11]. The instrument consists of 14 closed questions with five possible answers. Each answer has a score that is added up at the end of the questionnaire. The possible answers and their respective values are: 0 = Never; 1 = Rarely; 2 = Sometimes; 3 = Almost always; 4 = Always. The scale can add scores between 0 and 56 points. Depending on the score obtained, sums below 25 indicate tolerable levels of stress and values above 25 indicate high levels of stress.

Anxiety and Depression Scale

Anxiety and depression were assessed using the Hospital Anxiety and Depression Scale (HAD), which is also designed to assess mood disorders. The scale consists of 14 multiple-choice items, seven for anxiety and seven for depression (forming two subscales). Each item can be scored from 0 to 3 points, and each subscale can reach 0 to 21 points, with higher scores related to higher levels of anxiety and depression. The HAD scale has been validated for the Brazilian population and is a scale for detecting the state of anxiety and depression, which, based on the score obtained, classifies patients as having an unlikely diagnosis (0 to 7 points), possible (8 to 11 points) or probable (12 to 21 points)[12].

For data analysis, the Statistical Package for Social Science SPSS® version 20.0 was used[13]. Descriptive analyses of the dispersion and central tendency variables were developed, with the mean, standard deviation, maximum, and minimum values calculated for the quantitative variables. Proportions were generated for the categorical variables. The Shapiro and Kruska Wallis tests were used to confirm the normality of the data. Bivariate analyses using the t-test were used to compare the means between continuous variables. One-way ANOVA was used to compare more than two means. Statistical significance was determined at a p-value <0.05. The strength of correlations was verified according to the following classification: absent or very weak (r-value + or – less than 0.19); weak (r ranging between 0.20 and 0.39); moderate (r between 0.40 and 0.69); strong (r between 0.70 and 0.89); very strong (r between 0.90 and 1.00)[7].

The study was submitted to the Research Ethics Committee of the Federal University of Santa Catarina and was approved under protocol numbers 550.587 and 1.960.220. It also received approval from the city government. All ethical precepts determined by Resolution No. 466/12 of the National Health Council were respected[14].

Results

The study included 362 people with DM treated at the PHC in the city of Florianópolis, with a mean age of 62.4 years (SD: 11.5). Regarding health conditions, the mean time since diagnosis of DM was 11.56 years (SD: 10.25), 247 (68.2%) participants had high blood pressure, and 79 (21.8%) participants reported the presence of DM complications. The sociodemographic characteristics of the participants are presented in Table 1.

Table 1. Sociodemographic characterization of the study sample. Florianópolis, SC, Brazil, 2015-2016

Variable	Total Sample (n = 362) N (%)
Gender	
Female	232 (64.1%)
Male	130 (35.9%)
Religion	
Without religion	21 (5.8)
With religion	341 (94.2)
Marital status	
Married	201 (55.5)
Widowed	70 (19.3)
Divorced	46 (12.7)
Single	45 (12.4)
Education	
Never studied	24 (6.6)
Elementary School (1st to 8th grade)	201 (55.6)
High School	90 (24.8)
Higher Education	36 (10.0)
Postgraduate	11 (3.0)

Economically active	
Does not work	42 (11.6)
Works	95 (26.2)
Retired	202 (55.8)
Pensioner	23 (6.4)
Monthly family income	
Up to 1 SM*	50 (14.1)
>1 SM up to 3 SM	131 (37.1)
>3 SM up to 6 SM	121 (34.1)
>6 SM	52 (14.7)

Note: *SM = Minimum wage (Salário- mínimo), in Brazil R$880.00 (2015 and 2016), 354 participants answered this question.

Table 2. Distribution of scores of variables measured in the study. Florianópolis, SC, Brazil, 2015-2016

Variables	Mean (SD)	Median (min-max)
Resilience	80.5 (14.0)	83.0 (23.0 - 100.0)
Stress	20.9 (10.5)	20.0 (0 - 54.0)
Anxiety	5.8 (4.5)	5.0 (0 – 21.0)
Depression	5.1 (4.5)	4.0 (0 - 21.0)

The resilience score had an average of 80.5 (SD: 14.0). For stress, the average was 20.9 (SD: 10.5). Anxiety reached an average of 5.8 (SD: 4.5) in the participants, while the average for depression was 5.1 (SD: 4.5). The minimum and maximum values are shown in Table 2.

The mean values and standard deviation of resilience according to stress, anxiety, and depression are presented in Table 3. Statistically significant differences were identified between the means of resilience in the three variables analyzed (p<0.001). The mean resilience score in people with tolerable stress was 85 (±10.4), those with high stress had lower resilience scores with a mean of 71.4 (±15.9). Participants with a probable diagnosis of anxiety had lower means of resilience scores, 68.9 (±16.39), as well as the lowest means of resilience score, 63.0 (±14.2) associated with a probable diagnosis of depression (Table 3).

Table 3. Distribution of average resilience according to stress, anxiety, and depression. Florianópolis, SC, Brazil, 2015-2016

Psychosocial factors	Average Resilience (SD)	P value
Stress		
Tolerable	85.0 (10.4)	< 0.001*
High	71.4 (15.9)	
Anxiety		
Unlikely diagnosis	83.9 (11.4)	
Possible diagnosis	74.4 (16.4)	< 0.001†
Probable diagnosis	68.9 (16.39)	
Depression		
Unlikely diagnosis	84.3 (11.5)	
Possible diagnosis	74.4 (13.5)	< 0.001†
Probable diagnosis	63.0 (14.2)	

Note: p* from the Independent Samples t-Test; p† from the Analysis of Variance (ANOVA) Test.

Regarding the results regarding the correlations performed between the variables investigated, it was found that resilience presented a statistically significant correlation with stress, anxiety, and depression (p < 0.001). Moderate and inversely proportional correlations were found between resilience and stress (r = -0.531), resilience and anxiety (r = -0.436), and resilience and depression (r = -0.570). When correlating the variables among themselves, a strong correlation was observed between anxiety and stress (r = 0.700), followed by a moderate correlation between anxiety and depression (r = 0.625) and a moderate correlation between depression and stress (r = 0.553).

Discussion

The National Health Survey (PNS), conducted in 2019 by the Brazilian Institute of Geography and Statistics (IBGE), reinforced that chronic diseases continue to be a public health problem in the country, generating negative impacts on health services, such as costly expenses, as well as affecting the population's quality of life. The estimate

showed that 7.7% of the population aged 18 or over has a medical diagnosis of diabetes, and in the South region this percentage was equivalent to 7.9%. Together with stroke and heart disease, diabetes caused losses in work productivity and a decrease in family income, with negative impacts on the Brazilian economy. In addition, in line with the theme of this study, the PNS revealed that 16.3 million people aged 18 or over were diagnosed with depression, reaching an estimated 10.2% compared to 7.6% in 2013[15].

At the end of 2019, the coronavirus was documented in China, and in March 2020, the COVID-19 pandemic was declared, being considered the greatest challenge of contemporary times, along with an unprecedented crisis, due to the significant demand for hospital beds, which caused the collapse of health systems worldwide[16].

Considering the above, resilience has proven to be a significant construct in the care of people with chronic conditions[17-19], the focus of this study is to verify the relationship between psychosocial factors and the resilience of people with DM.

Because it is a dynamic construct, resilience tends to help people maintain their stability in the face of acute and chronic health conditions, minimizing the health-disease process[20].

Studies indicate the presence of high averages for the resilience score of people with DM, as found in this study, reinforcing that the resilience of people with DM is like that of healthy people[8,21]. However, these studies did not explore other emotional and psychological conditions that could modify these resilience scores.

The correlations found in this study between resilience, stress, anxiety, and depression scores in people with DM were inverse and significant. Studies have shown that people with chronic diseases with lower resilience scores possibly have impaired coping and greater susceptibility to stress and symptoms of anxiety, depression, anger, and low self-esteem[22,23]. We believe, however, that stress, anxiety, and depression, if present in people with DM, can influence the way they deal with their condition.

In a study conducted with people with cancer, higher resilience scores were statistically significant with lower stress, as found in this study. The authors suggested assessing the level of resilience to adapt interventions seeking to individually improve this construct and thus reflect positively on the management of psychological symptoms of people with cancer[24].

In people who had breast cancer, a moderate correlation between depression and resilience ($r = -0.562$, $p < 0.001$) was observed, this correlation is like that found in this study, finding that people with higher levels of depression have lower levels of resilience[25]. Furthermore, a case study with a breast cancer patient showed that spirituality acts as an important motivating factor for faith and resilience[26].

Regarding stress alone, a study conducted with women with diabetes identified a similar average to that found in our study. The research findings highlighted women with high stress levels presented altered glycemic control and greater suffering[27].

In another study, also conducted only with women, inverse correlations were found between resilience scores and depression[28]. High resilience scores have also been inversely associated with depression and other psychiatric disorders, such as anxiety[29]. Corroborating our findings, a study showed that trait anxiety and resilience were correlated[30].

When associating the relationship between resilience, anxiety, and depression in people hospitalized due to cardiovascular diseases, it was found that the participants with the highest resilience scores were those with an unlikely diagnosis of depression. Those participants with depressive symptoms had the lowest resilience scores. Regarding anxiety, female participants diagnosed with anxiety showed significant associations with lower resilience scores[23]. The same reality was found in our findings.

A study conducted with women with HIV that sought the association between depression and resilience corroborated the results presented here, in which lower resilience scores were also correlated with the diagnosis of depression[31].

We identified an association between resilience scores and psychosocial factors: stress, anxiety, and depression, confirmed by the correlations and associations found, which point to depression as an aspect related to resilience, contributing to the lower resilience averages for those living with DM. Recently, some studies have pointed to the relationship between biological aspects and the resilience process, suggesting resilience models that encompass the individual, considering emotional, psychological, and biological aspects[20,32].

In general, people with DM had higher levels of stress and symptoms of depression when compared to healthy people[6,33]. Studies involving people with DM often focus on treatment adherence alone. When we look at the results of this study and others already mentioned, we realize the importance of exploring psychosocial factors that can contribute to improving a person's resilience, resulting in successful self-care strategies. A study shows that people with DM with high resilience scores tend to exhibit better self-care behaviors[3].

As a limitation of the study, we point out that the glycemic control and adherence to treatment of the participants were not evaluated, variables that could have a significant association with the resilience scores. Another limitation is the study design since the intentional sample only reached people who were linked to the local HC, which may have left out people with higher levels of stress, depression, and anxiety who do not attend the HC due to these conditions.

Conclusion

The findings of this study are relevant in the current post-pandemic context, impacting nursing, academia, and society. Concerning nursing, the findings lead professionals to consider the resilience of people with diabetes, allowing for differentiated approaches to treatment and ensuring

continuity of care. Providing an improvement in quality of life, strengthening resilience and self-care skills to face challenges related to the disease during the post-pandemic period. The findings revealed the importance of resilience and the need to consider the inclusion of the psychosocial factors studied here: stress, anxiety, and depression, by health professionals, and more specifically as part of nursing care. Resilience was associated with these factors as demonstrated in the present research. However, strengthening these factors related to the health treatment of people with DM is still somewhat challenging.

Including assessments of resilience, symptoms of mood changes, anxiety, and interpersonal support in PHC as part of the care routine can favor treatment. This topic still requires further study to explore how health professionals can act considering psychosocial factors in the care of people with DM, especially considering the current post-pandemic period.

In some cases, resilience can be a determinant of self-care behaviors and naturally influence the daily lives of those living with a chronic disease; therefore, the association between resilience and the disease process should be considered to seek to pay greater attention to interventions that strengthen the positive aspects of resilience in people with chronic diseases.

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