







## REVIEW ARTICLE

# Mental health of people with diabetes during the COVID-19 pandemic period: integrative review

*Saúde mental de pessoas com diabetes no período da pandemia de COVID-19: revisão integrativa*

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## ABSTRACT

**Objective:** To analyze studies on the mental health of people with diabetes during the COVID-19 pandemic period. **Method:** Integrative literature review with search and selection in the following databases: MEDLINE via PubMed®, CINAHL-Ebsco, Web of Science, Embase, PsycINFO and Cochrane. Seven primary studies available in full without temporal or language delimitation were included. **Results:** The COVID-19 pandemic negatively impacted the mental health of people with diabetes. The development and intensification of anxiety, depression and stress symptoms prevailed. Other outcomes evaluated showed an association between the isolation measures adopted to control the infection, psychological distress and the presence of concerns. **Conclusion:** The COVID-19 pandemic substantially affected the mental health of individuals with diabetes. Social distancing, fear of contagion, sleep and eating disorders and concerns with family members were determinants of a higher prevalence of mental suffering.

**Descriptors:** Diabetes Mellitus; Mental Health; Pandemics; Psychiatric Nursing; COVID-19; SARS-CoV-2.

## RESUMO

**Objetivo:** Analisar estudos sobre a saúde mental de pessoas com diabetes no período da pandemia de COVID-19. **Método:** Revisão integrativa da literatura, com busca e seleção nas bases de dados MEDLINE via PubMed®, CINAHL-Ebsco, *Web of Science*, Embase, PsycINFO e Cochrane. Foram incluídos sete estudos primários, disponíveis na íntegra, sem delimitação temporal ou de idioma. **Resultados:** A pandemia da COVID-19 impactou negativamente na saúde mental de pessoas com diabetes, prevalecendo o desenvolvimento e a intensificação dos sintomas de ansiedade, depressão e estresse. Outros desfechos avaliados evidenciaram associação entre as medidas de isolamento adotadas para controle da infecção, o sofrimento psicológico e a presença de preocupações. **Conclusão:** Foi evidenciado que a pandemia da COVID-19 afetou substancialmente a saúde mental de indivíduos com diabetes, sendo o distanciamento social, o medo do contágio, os distúrbios do sono e da alimentação e as preocupações com familiares determinantes para maior prevalência de sofrimento mental.

**Descritores:** Diabetes Mellitus; Saúde Mental; Pandemia; Enfermagem Psiquiátrica; COVID-19; SARS-CoV-2.

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## INTRODUCTION

The year 2019 marks the rise of a pandemic that has disrupted social, economic, political and health contexts around the world. It is a new pneumonia caused by coronaviruses identified in the city of Wuhan — China and referred to by the World Health Organization (WHO) as Coronavirus Disease 2019 (COVID-19). This has become a problem of great magnitude due to its potential for global dissemination, the need to restructure care in different contexts and levels of care, and impacts on the population's mental health and quality of life<sup>(1)</sup>.

In recent centuries, outbreaks and epidemics associated with coronavirus infections have been repeated with similarities both in the form of spread, and in containment and control measures<sup>(2)</sup>. Although the means of transmission and epidemiological characteristics are highlighted, these measures still constitute a challenge given the globalization process that contributes to the spread of the disease in large geographic proportions, as well as the numerous gaps in knowledge involving therapeutic methods, and physical, social and mental damages<sup>(3)</sup>.

The estimates made by the WHO show the dimension of the problem by pointing out that the global indicators of incidence are approximately 87 million and mortality exceeds the range of 1.8 million<sup>(4)</sup>. In Brazil, epidemiological data from the Ministry of Health indicate the growing number of infected people, surpassing eight million confirmed cases and 200 thousand deaths<sup>(5)</sup>.

Although this is considered a progressive infection with a high potential for dissemination, mortality indicators are mostly expressed in people with deficiencies or decreased immune response, whether associated with the aging process or by pre-existing conditions such as Diabetes Mellitus (DM) that determine the higher risk for serious complications<sup>(6)</sup>.

Given the isolation and social distancing measures adopted to ensure the dissolution of the epidemic curve and avoid collapses in health services, there is a predisposition to mental distress and illness in people with diabetes caused by difficulties of access to health services that favor the interruption of treatment and a greater vulnerability to infection<sup>(7)</sup>.

Thus, psychosocial effects can appear or intensify, having severe repercussions on mental health, physical functioning and family structure. These are psychological repercussions and stressful events that may reflect in the loss of productivity and a worse perception of the global state of health and quality of life, requiring support measures and care management<sup>(6)</sup>.

From this context, in which the spread of a virus little known by the scientific community is associated with the social distancing recommendation and the characterization of diabetes mellitus as a risk group, is formed a permissive environment for the development of studies aimed at

identifying the impairments and mental impacts experienced by this population as a subsidy for the reorganization of public health policies and the development of comprehensive lines of care<sup>(8)</sup>.

Considering the knowledge gaps and the significant increase in psychopathological comorbidities during the pandemic, the aim of this study is to analyze studies on the mental health of people with diabetes during the COVID-19 pandemic period.

## METHODS

This is an integrative literature review conducted through the following steps of investigation: development of the research question, literature search and sampling, data extraction, critical evaluation of included studies, analysis, synthesis of results and presentation of the review<sup>(9)</sup>.

The following research question was chosen for this study: How has the COVID-19 pandemic affected the mental health of people with diabetes mellitus? The question was developed using the PICo acronym<sup>(10)</sup>, defined as P (Population): people with diabetes, I (Interest): impact on mental health and Co (Context): COVID-19 pandemic.

The search and selection were performed by two reviewers independently between September and October 2020, after consultation of the following electronic databases: Online Medical Literature Analysis and Retrieval System (MEDLINE via PubMed®), Cumulative Index to Nursing and Allied Health Literature (CINAHL-Ebsco), Web of Science™, Embase, PsycINFO and Cochrane. A search for cross-references was performed with the aim to retrieve additional evidence. Resources to search gray literature were not used in this review.

The controlled and uncontrolled descriptors used to operationalize the search were applied according to the specificities of each database and obtained after consulting the Health Sciences (DeCS), Medical Subjects Headings (MeSH) and List of Headings of CINAHL Information Systems. The search terms were combined by applying the Boolean operators “AND” and “OR” (Diabetes mellitus OR diabetes AND Saúde Mental OR Mental Health AND Coronavirus OR COVID-19 OR SARS-cov-2 OR pandemia OR Pandemic). Chart 1 presents the search strategy generated in the consulted databases.

Inclusion was conditioned on the following criteria: primary studies assessing the mental health of adults aged 18-59 years with diabetes, during the COVID-19 pandemic, available in full, without language restriction or temporal delimitation. Duplicate records between databases, secondary source studies, opinion articles, theoretical reflection, editorials, theses, dissertations and book chapters were excluded.

After the search, the procedures for reading the titles and abstracts were followed to identify if the retrieved articles had potential for inclusion. Disagreements were managed by a third reviewer with clinical and methodological experience. The ZOTERO software was used in the management of results, aiming to identify and exclude duplicates, as well as to gather and organize the identified publications.

The search totaled 678 productions, of which 66 were excluded due to duplicity and 580 after reading the title and abstract. The full text analysis resulted in the composition of the sample, consisting of seven articles. The selection of studies followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) recommendations<sup>(11)</sup> (Figure 1).

For data analysis and extraction, an instrument built and validated by Ursi<sup>(12)</sup>, was used. It was adapted for this study considering the following variables of interest: referential aspects (year of publication and location), study objective, methodology (design, sample and level of evidence), measuring instrument and evaluated outcomes (impacts on mental health).

In this study, the quality of evidence was analyzed using the recommendations proposed by the Grading of Recommendations, Assessment, Development and Evaluation Working Group (GRADE), which can be characterized as high, moderate, low or very low. The quality of evidence allows the analysis of identified results, considering the study design,

risk of bias, presence of inconsistencies or uncertainties, if evidence is direct and the inaccuracy of results<sup>(13)</sup>.

Descriptive analysis of results was performed, in which a synthesis of the evidence included in the review was presented, as well as the comparisons between data identified. As the study does not involve human beings, it was not submitted for approval by the Research Ethics Committee. However, the ethical principles were maintained and the authors' copyrights were respected by citing each one of them.

## RESULTS

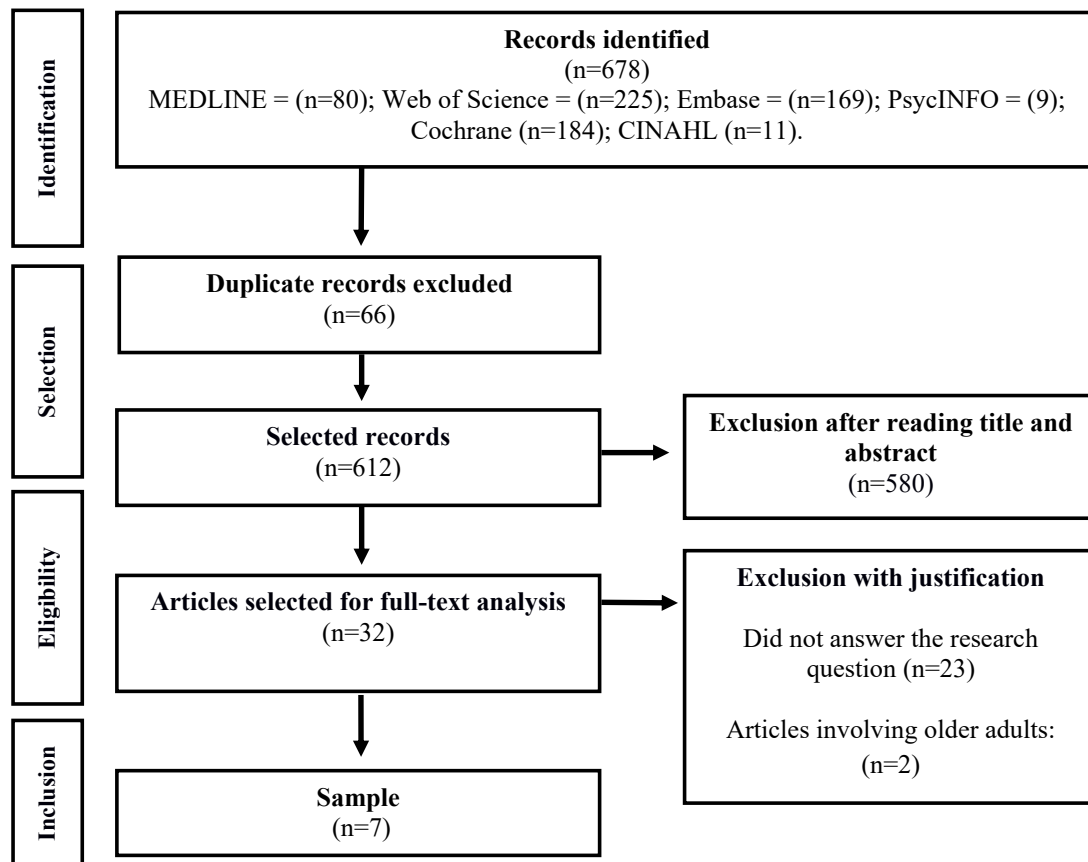
Chart 2 presents the characterization of the studies included<sup>(14-20)</sup>, showing the predominance of studies published in 2020 and developed in different scenarios of the international context such as India<sup>(14)</sup>, United States of America<sup>(15)</sup>, Denmark<sup>(16,20)</sup>, Brazil<sup>(17)</sup>, Netherlands<sup>(18)</sup> and Saudi Arabia<sup>(19)</sup>. As for the methodological design, the cross-sectional approach stood out<sup>(14,16,17,19,20)</sup>, followed by cohort studies<sup>(15,18)</sup>. All studies had low quality of evidence.

The studies evaluated showed that during the COVID-19 pandemic, people with diabetes had impaired mental health, with symptoms of stress, anxiety and depression prevailing<sup>(14,18-20)</sup>. Other outcomes evaluated indicate that concern<sup>(15,17)</sup>, psychological distress<sup>(16)</sup>, eating disorders and changes in sleep patterns are expressive in this population segment<sup>(17)</sup>.

**Chart 1.** Search strategy generated in the consulted databases. Picos, PI, Brazil, 2020.

Databases	Search strategy
MEDLINE via PubMed	("diabetes mellitus"[MeSH Terms] OR ("diabetes"[All Fields] AND "mellitus"[All Fields]) OR "diabetes mellitus"[All Fields] OR ("diabete"[All Fields] OR "diabetes mellitus"[MeSH Terms] OR ("diabetes"[All Fields] AND "mellitus"[All Fields]) OR "diabetes mellitus"[All Fields] OR "diabetes"[All Fields] OR "diabetes insipidus"[MeSH Terms] OR ("diabetes"[All Fields] AND "insipidus"[All Fields]) OR "diabetes insipidus"[All Fields] OR "diabetic"[All Fields] OR "diabetics"[All Fields] OR "diabets"[All Fields])) AND ("mental health"[MeSH Terms] OR ("mental"[All Fields] AND "health"[All Fields]) OR "mental health"[All Fields]) AND ("COVID 19"[Supplementary Concept] OR "COVID 19"[All Fields] OR "COVID19"[All Fields])
Web of Science	ALL=("diabetes mellitus" AND "Saúde Mental" AND "COVID19" OR "Pandemia" OR "SarsCov2")
Embase	('diabetes mellitus'/exp OR 'diabetes mellitus' OR (('diabetes'/exp OR diabetes) AND mellitus) OR 'diabetes'/exp OR diabetes) AND ('mental health'/exp OR 'mental health' OR (mental AND ('health'/exp OR health))) AND ('COVID19'/exp OR COVID19)
PsycINFO	Any Field: diabetes mellitus AND Any Field: Mental Health AND Any Field: pandemic
Cochrane	('diabetes mellitus'/exp OR 'diabetes mellitus' OR (('diabetes'/exp OR diabetes) AND mellitus) OR 'diabetes'/exp OR diabetes) AND ('mental health'/exp OR 'mental health' OR (mental AND ('health'/exp OR health))) AND ('COVID19'/exp OR COVID19)
CINAHL	(diabetes mellitus OR diabetes OR diabetic) AND mental health AND (COVID-19 OR sars-cov-2 OR coronavirus OR corona)

MEDLINE: Medical Literature Analysis and Retrieval System Online; CINAHL: Cumulative Index to Nursing and Allied Health Literature. Source: Research database, 2020.



MEDLINE: Medical Literature Analysis and Retrieval System Online; CINAHL: Cumulative Index to Nursing and Allied Health Literature. **Figure 1.** Flowchart of the study selection process. Picos, PI, Brazil, 2020.

**Chart 2.** Summary of included studies. Picos, PI, Brazil, 2020.

Place and year	Design and sample	Objective	Instrument	Outcome	Results	LE
India 2020 <sup>(14)</sup>	Descriptive cross-sectional. Adults with type 2 DM (n=110).	To identify the effects of social distancing on psychosocial health.	HADS	Psychosocial health.	Increased stress and anxiety.	Low
United States of America 2020 <sup>(15)</sup>	Observational cohort Adults with type 1 (n=763) and type 2 (n=619) DM.	To describe the effects of the COVID-19 pandemic in adults with type 1 and type 2 DM.	Electronic questionnaire developed by the authors.	Disease control and mental health.	Widespread increase in stress and mental distress.	Low
Denmark 2020 <sup>(16)</sup>	Descriptive cross-sectional. Adults with type 1 and type 2 DM (n=1,396).	To explore the psychosocial health in the early stages of the pandemic.	CCMh UCLA Loneliness Scale DAWN DDS.	Concerns related to the COVID-19 pandemic.	Loneliness, anguish and excessive concern for constituting a risk group, and given the difficulty to control blood glucose during infection and access health services.	Low

Continue...

Chart 2. Continuation.

Place and year	Design and sample	Objective	Instrument	Outcome	Results	LE
Brazil 2020 <sup>(17)</sup>	Descriptive cross-sectional. Adults with type 1 (n=52) and type 2 (n=68) DM.	To evaluate the prevalence of mental disorders during the period of social distancing due to the COVID-19 pandemic.	SRQ-20 B-PAID EAT-26 MSQ.	Prevalence of mental disorders.	High prevalence of emotional distress (93.3%). The main disorders involved anxiety, depression, eating disorders and moderate and severe changes in sleep pattern.	Low
Netherlands 2020 <sup>(18)</sup>	Observational cohort. Adults with type 1 (n=280) and type 2 (n=155) DM.	To assess if distancing measures in the context of the COVID-19 pandemic affect the level of perceived stress.	PSS	Perceived stress.	Increased stress and anxiety associated with difficulty in glycemic control.	Low
Saudi Arabia 2020 <sup>(19)</sup>	Descriptive cross-sectional. Adults with DM (n=568) and without DM (n=1,598).	To determine the prevalence and factors associated with depression and anxiety among people with and without diabetes during the COVID-19 outbreak.	PHQ-9 GAD-7	Anxiety, depression and diabetes symptoms.	Although no statistical differences were found between the two groups, people with DM had a high prevalence of anxiety and depression, especially given the cancellation of clinical evaluations and the fear of contamination or being left without treatment.	Low
Denmark 2020 <sup>(20)</sup>	Multicentric cross-sectional. General population (n=1,046), families with children (n=1,032) and older people (n=1,059).	To document the effects of the COVID-19 pandemic and social distancing measures on mental health.	CCMh	Mental health.	The level of stress, quality of life and social isolation remained relatively stable during isolation, although there was a slight deterioration in overall mental health.	Low

B-PAID: Problems Areas in Diabetes Scale; CCMh: Copenhagen Corona-Related Mental Health; COVID-19: Coronavirus Disease-2019; DAWN: Diabetes Attitudes, Wishes and Needs; DDS: Diabetes Distress Scale; EAT-26: Eating Attitudes Test; GAD-7: Generalized Anxiety Disorder Scale-7; HADS: Hospital Anxiety and Depression Scale; MSQ: Mini Sleep Questionnaire; PHQ-9: Patient Health Questionnaire-9; PSS: Perceived Stress Scale; SRQ-20: Self Report Questionnaire-20.

Among the factors associated with psychological impairment, social distancing, fear of contagion, difficulties in accessing health services and in glycemic control stand out<sup>(16,18,19)</sup>.

Regarding the instruments adopted for the assessment of anxiety symptoms, the Hospital Anxiety and Depression Scale (HADS) stood out<sup>(14)</sup>. Diabetes-related stress/suffering, changes in the current level of stress or concern with diabetes, and feelings of social isolation were assessed using an online questionnaire<sup>(15)</sup>. Other instruments were used to assess

mental health indicators, concerns and the formation of a support network and social support, such as the Copenhagen Corona-Related Mental Health (CCMH)<sup>(16,20)</sup>, Patient Health Questionnaire-9 (PHQ-9), Generalized Anxiety Disorder Scale-7 (GAD-7)<sup>(19)</sup>, UCLA Loneliness Scale, Perceived Stress Scale (PSS)<sup>(18)</sup>, Diabetes Attitudes, Wishes and Needs (DAWN), Diabetes Distress Scale (DDS)<sup>(16)</sup>.

Additionally, mental distress was assessed using the Self Report Questionnaire (SRQ-20), diabetes using the Brazilian

version of the Problem Areas in Diabetes Scale (B-PAID), eating attitudes using the scale (EAT-26), and the mini-questionnaire (MSQ) was used for sleep assessment<sup>(17)</sup>.

## DISCUSSION

In this review, during the COVID-19 pandemic, people with diabetes showed significantly higher levels of stress, anxiety, depression, changes in sleep patterns and eating disorders associated with social distancing measures, less healthy habits and concern with family members and the economic crisis.

Thus, the literature highlights that social distancing can result in health damages and lead to psychosocial implications, since emotional reactions can intensify, determining a greater predisposition to the use of psychoactive substances, inappropriate eating practices and lower level of physical activity<sup>(21)</sup>.

One of the identified studies showed high levels of psychological distress in the population studied, in which 93.3% of patients had evidence of psychiatric disorder, including anxiety, depression and stress. The greatest tendency for mental disorder was observed in the group with DM1, while patients with DM2 had higher indicators of anxiety and depression<sup>(17)</sup>.

Note that people with type 1 DM have a greater demand related to the amount and time of insulin administration and staying longer at home can result in better adherence and control of the disease. On the other hand, in type 2 DM, maintaining healthy habits, including physical exercise and a balanced diet can be greatly impaired during quarantine. These possible differences can have a positive or negative impact in terms of glycemic control, contributing differently to the onset of psychological distress during the COVID-19 pandemic<sup>(15,16)</sup>.

During epidemics, a greater number of people tend to have their mental health affected, thereby constituting a secondary effect experienced by a significant number of people affected by the infection. A study showed that the implications for mental health may be more prevalent than the epidemic itself and lead to incalculable psychosocial and economic impacts, considering its resonance in different contexts<sup>(22)</sup>.

Thus, the impacts on mental health can range from expected acute stress reactions due to adaptations to the new routine, to more severe damages in psychological distress. During moments of social isolation, psychosocial vulnerability, mourning for loss and distancing from family members can be intensified when experienced in a prolonged way<sup>(23,24)</sup>.

Depression indicators were higher in groups concerned with the fact of a close relative becoming seriously ill and fear of being infected, and those watching news about the pandemic<sup>(19,20)</sup>. Studies conducted during epidemic

outbreaks that required quarantine indicated that concerns about the duration of social distancing measures, fear of infecting other people, frustrations, boredom and financial concerns constitute behavioral changes identified during and after this period<sup>(25)</sup>.

In view of this, family support and support for people with diabetes stands out as a fundamental strategy for minimizing mental suffering. Thus, family care is recognized by means of several attributes, including presence, inclusion and promotion, and the interaction and interpretation of the situations experienced occur through such attributes<sup>(26)</sup>.

Another study conducted in England indicated that people who develop diabetes are more prone to feelings of loneliness and isolation<sup>(27)</sup>. Therefore, the care and health care of people with diabetes during the pandemic period must prioritize, in addition to the maintenance of clinical conditions, the promotion of mental health and enhancement of family support with strategies favorable to self-care and the development of effective coping measures.

It is also noteworthy that people who reported having more difficulty with glycemic control during the period of social distancing felt the need to use a greater amount of insulin and half of these participants reported weight gain and less practice of exercises<sup>(18)</sup>. A balanced diet and physical activity are the pillars of diabetes self-care and can reduce the risk of worse outcomes in people with diabetes and in those with cardiometabolic multimorbidities<sup>(28)</sup>. The adoption of a regular exercise plan may not be feasible due to social distancing, restrictions on outdoor activities and concerns about the high risk of spreading diseases in gyms and sports centers<sup>(29)</sup>.

Among the restrictions, the recommendations for the suspension of in-person clinical evaluations stand out, resulting in less access to health services. Measures such as telemedicine consultations or telephone counseling, issuing medication to caregivers or family members at lower risk, online coordination of medication distribution and dispensing medication for long periods should be considered by health providers<sup>(29)</sup>.

The use of social media can also constitute a real-time communication strategy to help the circulation of data and information during the pandemic<sup>(30)</sup>. A quality service, online availability to answer the main doubts with specialized professionals, awareness of health professionals about the importance of the internet and its various possibilities of connectivity and patient follow-up with continuous monitoring and reassessment<sup>(31)</sup> are resources that can be used to provide emotional support and establish strategies to prevent risky behavior.

Therefore, the COVID-19 scenario has shown aggravated in face of the issue involving the development of anxiety, depression, stress, sleep and eating disorders in people with

diabetes, showing the need for attention to this group even after the pandemic. It is extremely important to know about complications and peculiarities related to signs and symptoms of people with diabetes, demanding an educational work through guidance to patients, their families and health professionals. The nursing team, in particular, can develop actions and care for screening, identification and monitoring of mental suffering in the face of a pandemic scenario, aiming at preventing complications and promoting quality of life and a sense of wellbeing<sup>(32)</sup>.

Although remotely, we initially suggest offering psychological care, which involves humanized care and practical assistance in crisis situations, seeking to alleviate concerns, offer comfort, activate the social support network and meet basic needs to be reached in the short, medium and long term<sup>(33,34)</sup>.

The limitation of the study refers to the low quality of evidence, the heterogeneity of studies using different collection instruments and follow-up time, as well as the design adopted, which present a risk of bias and do not allow establishing cause-and-effect relationships.

## CONCLUSION

It is understood that the COVID-19 pandemic has substantially affected the mental health of individuals with diabetes mellitus. Confinement associated with social distancing, fear of contagion by the new coronavirus, sleep and eating disorders, concern with family members and difficulty in maintaining a healthy lifestyle were determinants of the development and intensification of stress and symptoms of anxiety, depression, anguish and loneliness.

The results obtained in this review emphasize the need for humanized care, as well as the creation of strategies and comprehensive lines of care aimed at promoting health and adequately coping with the current context in which we live, and to minimize the psychosocial impacts caused by the COVID-19 pandemic in this population segment.

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