# The use of assistive technological tools in people with depression arising from the Covid Pandemic

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## **Abstract**

Depression is a disease that affects approximately 60 million people in the world each year, affecting around 11.5 million Brazilians, which presents in the individual severe anxiety disorders, which may evolve into cases of suicide, ranking among the 20 major causes of death/ year. As a result of Covid-19, approximately 90% of cases of depression in Brazil in the last year increased and people with anxiety crisis and symptoms of acute stress doubled in 2020, and this increases concerns regarding the social isolation that extends. This study aimed to investigate the resources of assistive technologies applied to depressive cases with potential application as treatment mechanisms in the context of the COVID-19 pandemic. This is a study with an exploratory objective, a quantitative approach and a bibliographic procedure and descriptors databases. The study evaluated the presence of 306 articles, being used as a filter the interval between 5 and 10 years of publication. The tools used to depression acquired during the pandemic were also discussed, where the results contributed to broader reflections on the challenges imposed by the pathology. Some interesting results were obtained with the application of Tec. Assistive (AT) depressed patients by Covid-19, highlighting: remote care, electroconvulsive therapy, Deprexis, in addition to art therapy and music therapy, the latter being calls for integrative and complementary practices in health (PICs) with application encouraged by SUS showing great relevance and effectiveness in the treatment. The research carried out has shown the potential of ED tools to address the effects of depression in people with Covid-19. This study encourages the development of new research and the development of instruments that are more specific to this need in order to minimize the problems arising from this disease.

**Keywords:** remote consultation; teleconsultation; depression; therapy; art therapy; music therapy

## 1. Introduction

Depression is a prevalent mental health disorder, described as a chronic illness and a lasting feeling of sadness or lack of interest in practices that were previously pleasurable and pleasant (OPAS, 2020). According to the organization, it is estimated that more than 300 million people suffer from depression, and the context is different from the usual mood swings and short-lived emotional responses.

Particularly when sadness lasts for a long time and with different intensities (mild, medium or severe), it becomes a critical health condition, which can cause distress to the affected person, disorder at

work, school and in the family environment, and with possibilities of lead to suicide. It is mentioned in surveys that about 800,000 people die by suicide each year, and it leads the second place as the leading cause of death among people aged between 15 and 29 years (OPAS, 2020).

When a person is depressed, they have symptoms that lower their mood, which causes a decrease in their activities and energy. Studies indicate that in these conditions the person has a loss of interest or in feeling pleasure, a decrease in the ability to concentrate, always related to fatigue. It is identified, in most cases, problems related to sleep and decreased appetite (CAVALHEIRO; TOLFO, 2011).

During the pandemic, the feeling that is often identified is sadness and depression, affecting 40% of adults in the country, and another 50% of this population reported a frequent feeling of nervousness, anxiety and despair. Problems with sleep also appeared, where 40% started to have this deficit. Such signs and symptoms were higher in young adults, women and people with depression (BARROS; GRACIE, 2020).

At the beginning of 2020, the World Health Organization (WHO) declared a state of pandemic, caused by the new coronavirus, where from that moment onwards prevention measures were installed in Brazil and in the world and with them came the concern about contamination and the hitherto unknown implications of this new disease (BUSS; ALCÁZAR; GALVÃO, 2020).

The fear of contracting the disease caused a feeling of insecurity in different aspects of people's daily lives, and this affects the way of living as well as the relationships between family members, friends and co-workers. The world has collapsed and contamination has crowded and overloaded health systems worldwide, affecting society beyond the several exhausting hours of work of health professionals and the most effective method of controlling the disease, social distancing and isolation, ends up triggering serious mental problems (FARO, 2020).

Also according to Faro (2020) Covid-19 has brought, in addition to all complications, various types of mental changes for the population and specialized attention is necessary in order to combat increasingly accentuated symptoms as a result of facing the disease, especially those on the front lines.

Dantas (2020) highlights that in the population it is possible to observe different epidemics during history that highlighted and accentuated critical mental factors and that, often in the long term, caused deep depression. In this way, the pandemic already presents its first cases of mental disorders and a large increase in the number of people who will develop mental disorders, in particular, depression. In this context, the number of people who have mental complications is much higher than those who were actually infected (ORNELL, 2020).

In the context presented above, it is essential to create health models that combine the space of easily accessible primary health with the therapeutic care and experience in diagnosis of a mental health specialist (MSH). These models have the potential to promote personalized therapy for those who first seek the family doctor (TÖNNIES *et al.*, 2019).

Technology has been used internationally to mediate the doctor-patient relationship, including telephone, e-mail, electronic consultation systems, video or their association. These can be used as a partial or substitute alternative to face-to-face care, for diagnosis, counseling, prescription, treatment and monitoring of acute or chronic conditions (CATAPAN; CALVO, 2020). This service known as e-consultation, remote consultations, aimed at primary health care, in the last decade have become

predominant (MURPHY et al., 2021).

In the context related to assistive technologies, these new resources provide a better quality of life for those who need it, especially in a period of social distancing. For Linde et al. (2015), their analyzes suggest that the differences between the various psychological treatments, and the visits provided by remote therapists, guided self-help and minimal contact approaches can result in similar responses to personalized face-to-face therapies. In addition, there is evidence that, for patients with mild and distinct depression, psychological therapies may be less effective compared to patients with major depression.

Faced with the complexity of depression, especially in the pandemic period, this study aimed to investigate the resources of assistive technologies applied to depressive cases with potential application as treatment mechanisms, in the context of the COVID-19 pandemic.

# 2. Methodology

This is a study of an applied nature, exploratory objective, quantitative approach and bibliographic procedure, with research in different free access digital libraries in order to identify useful tools to help people diagnosed with depression acquired as a result of the Covid pandemic. -19.

The research was carried out at the Federal University of Mato Grosso do Sul (UFMS) – Faculty of Medicine (FAMED). Data analysis was sought in different free access digital libraries with a periodicity of 10 years, using specifications focused on assistive technology and depression and the problems applied to social distancing that lead many to develop this complex pathology. To this end, there was active research using the authors' computers during the months of May and June 2021, seeking results between the years 2011 to 2021.

The following databases (Table 1) used for the research were made in free access digital libraries, as well as the descriptors:

Table 1: Free access digital databases used in research

DIGITAL LIBRARY	SITES
Health Sciences Descriptors	https://decs.bvsalud.org
Latin American and Caribbean Literature in Health	https://lilacs.bvsalud.org/
Sciences	
MEDLINE/BIREME/OPAS	https://bvsalud.org
PUBMED	https://pubmed.ncbi.nlm.nih.gov
SciELO	https://www.scielo.org

Source: Authors.

Descriptors in two languages were used for searches in the databases chosen for the study in order to filter the tools used to treat depression acquired during the pandemic, using the range 5 to 10 years of publication as a filter, according to descriptors or words -key combinations and described below, with descriptors in DeCs (Descriptors in Health Sciences) and their combinations with Boolean operators:

#### PORTUGUESE AND ENGLISH LANGUAGE

Keywords: Remote consultation. Teleconsultation. Depression. Therapy. Art therapy. Music Therapy.

Results that brought articles with the theme "depression" unrelated to the Covid-19 pandemic and those studies that did not bring results aligned with the treatment of patients through original tools were excluded.

## 3. Results and discussion

# 3.1 Art Therapy

For art therapy as a used method of treatment associated with depression in the period of the COVID-19 pandemic, 95 articles were found related to its use in people with the disease.

According to Reis (2014) art therapy is an area of professional activity that uses artistic resources for therapeutic purposes, being a way of working using artistic language as the basis of professional client communication. Its essence is aesthetic creation and artistic elaboration in favor of health. Art therapy uses artistic activity as an instrument of professional intervention for the promotion of health and quality of life, covering today the most diverse languages: plastic, sound, literary, dramatic and corporal, from expressive techniques such as drawing, painting, modeling, music, poetry, drama and dance.

Some research shows that after the application of art therapy, and the constant participation in recreational activities, it facilitated the development of the rehabilitation of the depressive person, and the interest in wanting to develop and allow other ways of expressing feelings (ROBAYO; FELICETTI, 2018).

It is believed that these mediating objects used by psychology can be used as an alternative treatment for depression associated with post-traumatic events, such as the pandemic, helping both the health professional and the patient. It is thus considered that working with art therapy is to open space for the patient to be able to express themselves in different ways, since they touch the patient as a whole when used, providing a positive impact (GOMES, 2015).

Feelings that the patient would not be able to express or verbalize after the development of depression, can be seen in the works with art, leading them to express their joys, sorrows, traumas, dreams and desires through symbolic means (NICOLETTA, 2016). In this way, it is necessary to focus on emotional competences, to learn to express and create, integrating all dimensions of living and living in contemporary society (ADAMS DORNELES; LAUXEN, 2017).

Rover; Duarte (2018) consider the current needs in the field of mental health that transit through Brazil and the world where they promote creative thinking in training, planning and execution of the program, in order to favor the flowering of the potential of each human being.

It is believed, therefore, that the application of these mediating objects of psychology can provide the patient with depression with the process of emotional development that is inside and outside of him, strengthening, or even creating, a harmonization with himself and with others around him, because, as seen, their benefits can be used as a favorable bridge in the aid of Assistive Technology (AT) for depressive patients.

## 3.2 Music Therapy

For music therapy as a method of treatment associated with depression in the period of the COVID-19 pandemic, 82 articles were found related to its use in people with the disease.

Music therapy is defined as the use of music and/or its elements (sound, rhythm, melody and harmony) by a qualified music therapist, with a client or group, in a process to facilitate and promote communication, relationship, learning, mobilization, expression, organization and other relevant therapeutic goals, in order to achieve physical, emotional, mental, social and cognitive needs (ZANINI, 2019).

Kohan's (2018) study reports her experience of listening to music and her contribution to thinking about the motivating sense of learning, starting from a place of search for encounter in life and education. As a result, the article states that this action broadens the look at the development of empathy, in order to understand the place of oneself and the other in the world, offering the meaning of friendship as an impersonal way of thinking. Kohan's study collaborates with this study as they understand music as a means that exerts a sensitive emotional and psychological influence on the human being, fundamental for the opening for the assimilation of knowledge, resignification and resilience.

Music is part of the construction of the person, of their cognition, knowledge, and helps in the awakening of the human being's sensitivity and creativity, as well as in the development of memory, concentration and self-knowledge, in addition to promoting socialization and affectivity and contributing to the body awareness and movement, necessary and precise attitudes for the depressive that, in the event, presents itself with distorted and clouded feelings.

The therapist Nicoletta (2016) states that music can contribute to the learning, resignification and (re)construction of beliefs produced or transmitted, helping the individual in contact with himself, with his potential and in the learning process, helping him to have a new look at oneself, using different types of sounds, meditation, relaxation, nature sounds, rain sound, wind sound, bird sounds, among others, making the work playful and pleasurable; leaving the patient light, happy, with elaborations of feelings, expressing what he keeps inside. The value of music in the therapeutic process can be seen as a partnership with assistive technology (AT) for depressive patients in times of pandemic and social isolation.

Music therapy as an (AT), in addition to providing improvement for health, also corroborates depression, relieving anxiety, increasing the feeling of happiness, improving mood, concentration, encouraging communication, reducing stress, caused by social isolation.

## 3.2 Remote Consultation

For remote consultation as an assistive technology, it is a method used for treatment associated with depression in the period of the COVID-19 pandemic, 18 articles were found. It is worth mentioning that when searching the databases for depression associated with telemarketing (without association with the pandemic) 262 results were found.

To search for the descriptor "remote consultation", a search was carried out on the BIREME-OPAS portal, combined with the descriptor depression, using as a criterion the interval of 5 years of publication, from 2016 to 2021, full texts, main subject; remote query. As a therapeutic proposal for depression and with potential application in the midst of the COVID-19 outbreak, it was decided not to link the respective descriptors with the synonyms that mention the pandemic, so as not to restrict the publications to be

investigated. in all were.

Faced with the changes caused by the pandemic, some important changes in the laws had to be carried out as pointed out by Minervino (2020) adaptations such as the prescription of medicines electronically, delivery of medicines at homes, all adaptations affirm and corroborate the effectiveness of teleservice for the cases of mental illness, especially in cases of depression in combating their symptoms.

Remote consultation, also known as teleconsultation or telehealth, aims to ensure diagnostic or therapeutic counseling by electronic means, with interaction between the patient and a clinician. Telepresence provides the patient with a feeling of presence as if they were in a face-to-face consultation, but without physically sharing the same space with the medical team, through technology in virtual interaction (OPAS, 2020).

Although there is evidence of the benefits and also of the limitations of teleconsultation, it is important to analyze formats, applications and safe and effective conditions, in which teleconsultation is beneficial for patient care, reasons not only for the impacts of technology on the doctor-patient relationship, but also also changes resulting from work processes and in the context of management (CATAPAN; CALVO, 2020).

It is imagined that in the future, it will be possible to guide professionals in specific therapeutic procedures to conduct the therapeutic processes that more highly trained professionals identify as the most promising treatment targets, with improved access and care, with treatment effectiveness, reducing costs. of mental health care where it reveals itself as an important assistive technology for the benefit of those who need it (HOFMANN; HAYES, 2019).

The socioeconomic benefits of the mental health condition encompass both its intrinsic aspect, such as the improvement of mental health and well-being, as well as its instrumental aspect, with regard to the ability to establish relationships, whether for work or leisure, and for decision-making. daily (CHISHOLM *et al.*, 2016). Third parties benefit from the treatment of mental disorders: for example, a mother with puerperal depression, who receives mental health care, responds positively to the child's affective, motor and cognitive development. Although there is no cure for mental disorders, the treatment of depression is low-cost, effective, and cost-effective (RAZZOUK, 2016).

A potential direct benefit of successful treatment of mental disorders is a reduction in the overall expenditure of health investments. Although the interventions have their costs, they can be favorably offset by a decrease in different services, especially for outpatient consultations or hospitalizations (CHISHOLM *et al.*, 2016). There are many other mental health apps for smartphones, but they still need to be analyzed and evaluated by researchers and professionals in the field. They teach meditation techniques such as anxiety management and even map a "mood chart" that allows the therapist to monitor the evolution of their patient's symptoms.

In the Collaborative Care (CC) model, the general practitioner is supported by an incident manager who tracks the patient over the phone, administers psychological assessments, and presents the information to a mental health specialist (MSM), typically a psychiatrist. Assistive technology techniques that eliminate distances such as remote consultation (telehealth) favor inclusion, rehabilitation and treatment with the most recommended specialist for the existing depressive type, which can be with the Psychiatrist, Psychologist, Occupational Therapist, among other health specialists mental. Carrying out monitoring and interventions, when necessary, the ESM prescribes medications or schedules face-to-face care (TÖNNIES

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et al., 2019) and in this way contributes to reducing the distance that social isolation causes in the pandemic period.

## 3.3 Deprexis

The use of Deprexis as an assistive technology used as a method of treatment associated with depression in the period of the COVID-19 pandemic, 69 articles were found related to its use in people with the disease.

According to Mullarkey et al. (2020), Deprexis is a self-guided artificial intelligence medical software that features an innovative technological method that was developed on the principles of cognitivebehavioral therapy using evidence, whose function is based on a methodology based on solving the individual's problems, assists in the behavior, social skills, focusing on solving everyday problems that the depressive goes through every day in order to assist in treatment.

Deprexis is an innovative assistive technology, however, it is still not very present in our country, it has already been tested in different randomized trials and presents positive results, mainly in Europe (LOPES et al., 2020). Also, according to the study carried out by the authors, it was designed to meet research on different models of intervention in depression, especially in Brazil, which is considered a lowand middle-income country.

Deprexis was developed many years ago and has undergone countless improvements, has been translated into Portuguese in Brazil, and has been used in randomized research. Rigorous clinical trials were conducted on the effectiveness of such programs in Brazil. Interventions based on the internet were placed as a viable alternative for treating depression, due to versatility and lower costs, adaptation to the patient due to flexibility of time and location.

Because it is an online intervention, it is important in times of a pandemic due to isolation and social distance, making it effective as an assistive resource in this context through which the world passes. Recently, the National Health Surveillance Agency (Anvisa) approved the use of the service in Brazil, but it does not replace consultations with psychologists and psychiatrists, thus, it becomes a complement to the treatment. In a study conducted with 3,805 participants.

Grafe; Moritz; Greiner (2020) presented results regarding the effectiveness in the use of Deprexis, where after 12 months a significant improvement can be seen in the symptoms presented by the participants, thus reducing the amounts spent on interventions, being a possible treatment and an important tool for depressive patients isolated in their homes due to social isolation.

# 3.4 Electroconvulsive Therapy

For electroconvulsive therapy as a method of treatment associated with depression in the period of the COVID-19 pandemic, 42 articles were found related to its use in people with the disease.

Every resource known as Assistive Technology is used to improve the quality of life of the person who has an illness and that enables their rehabilitation in the best possible way. According to Burhan et al. (2020) electroconvulsive therapy (ECT) is used as a highly effective treatment for severe, life-threatening and/or treatment-resistant depression, thus configuring an ED. While the risk of ECT treatment is still unknown, psychiatric services face the challenge of providing ECT as an essential service while reducing the risk of the spread of COVID-19. After research, the authors indicated that people, particularly the elderly, who are

the most vulnerable people in times of a pandemic, with life-threatening depression and/or severely distressed need to be prioritized to receive ECT. According to Chacko (2020), patients undergoing treatments with the technique led to their general clinical improvement, without further suicidal thoughts, which they had as a result of social isolation.

Electroconvulsive therapy (ECT) has become a great ally in the treatment of people with mild, moderate and advanced depression. It is a non-pharmacological treatment, approved by the Federal Council of Medicine (CFM) through CFM Resolution No. in psychiatric symptoms. Due to the lack of knowledge by people, it is often erroneously known as electroshock, but this treatment is performed safely, following safety and efficacy protocols, painless and with minimal side effects. Antidepressant medications take, on average, three to four weeks to take effect. With ECT, you get better in a week or two (JOSÉ; CRUZ, 2019).

It is noticed that depression is usually a chronic, recurrent and debilitating disorder that brings a lot of damage to the functioning and quality of life of affected patients. Although treatment with antidepressant medications is quite effective for a large proportion of patients, many of them do not respond adequately. The effectiveness of ECT in treating depressive symptoms has been established through numerous studies developed over the last few decades. ECT can be considered the most effective biological treatment for depression currently available, as no other treatment has so far been shown to be superior to ECT in the treatment of depression in controlled studies (ANTUNES, 2019), which corroborates the objective of this study.

## 4. Conclusion

The results found in this article showed the perception of ease, acceptance, benefit, barrier and adequacy regarding the use of assistive technologies by health professionals and the entire population, in situations of depression caused by the Covid-19 pandemic. This theme is extremely relevant to the process of humanized health care for the depressive person, mainly to meet the needs of the sick.

Therefore, it was observed that the use of Assistive Technologies as a resource to aid in the recovery of people affected by depression in the Covid-19 pandemic period presented satisfactory results in view of the objective of the article, expanding the understanding of the importance of AT in the face of restoration of diseases at the same time as simple resources, such as art therapy and music therapy, can also be identified as these technologies.

The methodology applied in the research proved to be assertive regarding the search for different resources used and that can be used in the treatment of depression due to the pandemic. As Covid-19 is an active disease in Brazil and in the world since 2020, research on it is accelerated and recent, when considering the Depression data related to it, which facilitated searches and the finding of new bibliographies, corroborating with this article.

There is also a need for investments and research by government spheres in the face of new and existing technologies that are effective in other countries and that in our country are scarce, p. ex. the Deprexis software, which presented important results in the rescue of depressive patients in the treatment process, as stated by Lopes *et al.* (2020) that at the end of their research, the effectiveness of this software was confirmed "by collaborating in the reduction of feelings of sadness and indecision in patients and in this

way it was possible to understand the promising use that facilitates the monitoring of the individual compared to usual methods". Therefore, AT are identified as solutions, providing functionality and quality of life for people who suffer from depression.

The study presented different approaches to the treatment of the exposed object as an aid to people diagnosed with depression acquired as a result of the Covid-19 pandemic. There are many effective therapeutic resources for mild, moderate and severe depression, as well as the provision of psychological and psychiatric treatments. From the analyzed articles, different tools can be identified for the treatment of depression that affects people in the pandemic period, but with emphasis on remote consultation, electroconvulsive therapy and the Deprexis software. These showed positive responses to the treatment of depression in people undergoing social isolation.

In this way, more studies and research on (AT) are necessary in order to innovate research, seeking to improve people's quality of life. It can be analyzed that even though there are great barriers to be overcome to reduce the number of people affected by this pathology, which increases the number of victims every year, tools that can help to reduce the aggravation were found and serve as support for the individual's recovery and thus emerges as a means of security for the depressed patient and their families.

In view of such perspectives, Assistive Technology (AT) is important, not only in the pandemic period, but in its entirety as a necessary resource for effective benefit in the rehabilitation of the body and mind in the face of the most diverse contemporary diseases, pointed out as modern and functional.

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