

The use of auriculotherapy in mental health care: an integrative review**A utilização da auriculoterapia no cuidado em saúde mental: revisão integrativa****El uso de auriculoterapia en la atención a la salud mental: revisión integradora****José Henrique da Silva Cunha¹****Francisca Bruna Arruda Aragão²****Larissa Barros de Souza³****Heloísa Cristina Figueiredo Frizzo⁴****Regina Célia Fiorati⁵****Received: 24/11/2020****Approved: 05/05/2021****Published: 01/01/2022**

This is an integrative review carried out in August and September 2019, with articles published between 2009 and 2019, from the following databases: LILACS, CINAHL, PSYCINFO, PUBMED, SCOPUS, WEB OF SCIENCE and EMBASE. It aimed to identify and analyze the existing evidence on the use of auriculotherapy in mental health care. The following descriptors were considered: *auriculotherapy*; *ear acupuncture*; *auricular acupuncture and mental health*; *depression*; and *anxiety*. Of the 533 articles found, 34 were included and led to the creation of six categories: *Auriculotherapy in the care of anxious manifestations*; *Auriculotherapy in the care of depressive manifestations*; *Auriculotherapy for stress relief*; *Auriculotherapy in the care of the use and abuse of psychoactive substances*; *Auriculotherapy in the care of sleep disorders*; and *Auriculotherapy in the care of psychic manifestations associated with organic issues*. Auriculotherapy proved to be a promising resource for anxiety, depression and stress relief manifestations. However, for cases of insomnia and dependence on psychoactive substances, the results were inconclusive, requiring further studies on these themes.

Descriptors: Complementary therapies; Auriculotherapy; Mental health.

Trata-se de uma revisão integrativa realizada nos meses de agosto e setembro de 2019, com os artigos publicados entre os anos de 2009 e 2019, a partir das bases de dados: LILACS, CINAHL, PSYCINFO, PUBMED, SCOPUS, WEB OF SCIENCE e EMBASE, com objetivo de identificar e analisar as evidências existentes sobre a utilização da auriculoterapia no cuidado em saúde mental. Considerou-se os descritores: *auriculotherapy*; *ear acupuncture*; *auricular acupuncture and mental health*; *depression*; e *anxiety*. Dos 533 artigos encontrados, 34 foram incluídos e deram origem a seis categorias: *Auriculoterapia no cuidado às manifestações ansiosas*; *Auriculoterapia no cuidado às manifestações depressivas*; *Auriculoterapia no alívio do estresse*; *Auriculoterapia no cuidado do uso e abuso de substâncias psicoativas*; *Auriculoterapia no cuidado nas alterações do sono*; e *Auriculoterapia no cuidado às manifestações psíquicas associadas a questões orgânicas*. A auriculoterapia mostrou-se um recurso promissor para manifestações ansiosas, depressivas e no alívio do estresse. Entretanto, para os casos de insônia e dependência de substâncias psicoativas, os resultados foram inconclusivos, tornando-se necessários mais estudos nessas temáticas.

Descritores: Terapias complementares; Auriculoterapia; Saúde mental.

Se trata de una revisión integradora realizada en los meses de agosto y septiembre de 2019, con los artículos publicados entre los años 2009 y 2019, a partir de las bases de datos: LILACS, CINAHL, PSYCINFO, PUBMED, SCOPUS, WEB OF SCIENCE y EMBASE, con el objetivo de identificar y analizar las evidencias existentes sobre el uso de la auriculoterapia en el cuidado a la salud mental. Se consideraron los descriptores: *auriculotherapy*; *ear acupuncture*; *auricular acupuncture and mental health*; *depression*; y *anxiety*. De los 533 artículos encontrados, 34 se incluyeron y dieron lugar a seis categorías: *Auriculoterapia en el cuidado de manifestaciones ansiosas*; *Auriculoterapia en el cuidado de manifestaciones depresivas*; *Auriculoterapia en el alivio del estrés*; *Auriculoterapia en el cuidado del uso y abuso de sustancias psicoactivas*; *Auriculoterapia en el cuidado de alteraciones del sueño*; y *Auriculoterapia en el cuidado de manifestaciones psíquicas asociadas a cuestiones orgánicas*. La auriculoterapia demostró ser un recurso prometedor para las manifestaciones ansiosas y depresivas y para el alivio del estrés. Sin embargo, para los casos de insomnio y dependencia de sustancias, los resultados no fueron concluyentes, por lo que es necesario realizar más estudios sobre estos temas.

Descriptores: Terapias complementarias; Auriculoterapia; Salud mental.

1. Occupational Therapist. Acupuncturist. Master in Health Care. PhD student in Psychiatric Nursing, Universidade de São Paulo at Escola de Enfermagem de Ribeirão Preto (EERP/USP), Ribeirão Preto, SP, Brazil. ORCID: 0000-0002-4255-6125 E-mail: josehenrique_dasilvacunha@hotmail.com.

2. Nurse. Master in Adult and Child Health. PhD student in Nursing at EERP/USP, Ribeirão Preto, SP, Brazil. ORCID: 0000-0002-1191-0988 E-mail: aragao_bruna@usp.br

3. Occupational Therapist. Master of Science. PhD student in Nursing at EERP/USP, Ribeirão Preto, SP, Brazil. ORCID: 0000-0002-8060-7974 E-mail: tobarros@usp.br

4. Occupational Therapist. PhD of Science. Adjunct Professor of the Occupational Therapy course at the Graduate Program in Psychology at the Universidade Federal do Triângulo Mineiro, Uberaba, MG, Brazil. ORCID: 0000-0002-7661-0353. E-mail: heloisa.frizzo@yahoo.com.br

5. Occupational Therapist. PhD of Science. Professor at the Occupational Therapy Course at the Faculdade de de Medicina de Ribeirão Preto, USP. Ribeirão Preto, SP, Brazil. ORCID: 0000-0003-3666-9809. E-mail: reginac@fmrp.usp.br

INTRODUCTION

Mental health is essential to people, and its imbalance can cause mental illness^{1,2}. For the World Health Organization, around 450 million people suffer from mental or behavioral disorders globally¹.

Mental or behavioral disorders are characterized by changes in thinking and mood, or by behaviors associated with personal distress, such as anxiety and depression, which can be provoked if the person is unable to adapt to stress-generating events^{1,3}.

Depression is the leading cause of disability worldwide, affecting more than 350 million people⁴. It is characterized by sadness, loss of interest in performing daily activities, decreased energy, decreased concentration and changes in appetite and sleep^{1,5}. Anxiety is also one of the main causes of disability in the world, being considered a harmful mood disorder, characterized by persistent feelings of apprehension, despair, tension and anguish with the development of physical symptoms such as tachycardia, nervousness, and inability to relax, it can become chronic and harm the person's health^{1,6}.

Stress refers to any event arising from the internal and external environment that exceeds the person's sources of adaptation and resistance, which can be a triggering factor for illness and impair their quality of life^{7,8}.

Auriculotherapy, as one of the practices of traditional Chinese medicine, has been used for insomnia, depression and anxiety⁹, playing a fundamental role in physical, psychological and cognitive manifestations¹⁰.

There is scientific evidence showing positive effects of auriculotherapy for anxiety^{6,11}, depression¹², stress^{2,10}, sleep disorders¹³, in addition to subjective sleep improvements, anxiety reduction, and a greater sense of well-being and relaxation in patients treated in a laboratory for substance dependence¹⁴.

Auriculotherapy, a technique of traditional Chinese medicine, aims to stimulate specific points in the pinna that send signals to the brain and other specific organs that regulate and balance the physiological performance of the body, which allows its use for the treatment of various ailments, such as the painful ones, the inflammatory ones, and others^{13,15,16}, and is also used to treat withdrawal from substance abuse^{14,17}, in addition to enabling balance and unblocking of internal energy flows that cause physical and psychological illness¹³. Thus, this study aimed to identify and analyze the existing evidence on the use of auriculotherapy in mental health care.

METHODS

It is an integrative review, conducted in the following steps: a) Identification of the theme and guiding question; b) Establishment of criteria for inclusion and exclusion of studies; c) Definition of the information to be extracted from the selected studies; d) Evaluation of selected studies; e) Interpretation of results; f) Presentation of the review/synthesis of knowledge¹⁸.

In consultation and under the guidance of a specialized professional from the institutional library service, the following guiding question was formulated for this study: *How is auriculotherapy used in people who present manifestations related to mental health?* This question was elaborated using the PICO¹⁹ strategy (Chart 1).

Chart 1. Description of PICO strategy. Ribeirão Preto, SP, Brazil. 2019.

Acronym	Definition	Description
P	Population	People who present manifestations related to mental health, especially anxiety and depression.
I	Intervention	Auriculotherapy
O	Outcome	Mental health indicators related to emotional, psychological and social well-being in an individual or group.

The search for primary studies was carried out between August and September 2019, and the *Descritores em Ciências da Saúde* (DeCS) and the Medical Subject Headings (MeSH) terms were used, using the Boolean operators (OR and AND). Thus, the search strategy was formed

through controlled descriptors and keywords, with the combination: (“auriculotherapy” OR “ear acupuncture” OR “auricular acupuncture”) AND (“mental health” OR “depression” OR “anxiety”). The Literatura Latino-Americana e do Caribe em Ciências da Saúde (LILACS); Cumulative Index to Nursing and Allied Health Literature (CINAHL); PSYCINFO; National Library of Medicine (PUBMED); Scopus; Web of Science (WOS) and Excerpta Medica (EMBASE) databases were consulted.

The following inclusion criteria were adopted: primary studies, published in Portuguese, English or Spanish; originals; available in full and free of charge; that addressed the use of auriculotherapy in manifestations related to mental health, especially anxiety and depression; and that have been published and indexed in the aforementioned databases between 2009 and 2019. As exclusion criteria: reviews; course completion papers; dissertations; theses; reply letters; editorials; reviews; books; chapters; duplicate publications; and articles that did not answer the guiding question after a full reading.

The articles found were exported to the Rayyan platform, a technology that helps speed up the screening of abstracts and titles, presenting a high level of accuracy for the selection of studies²⁰. On this platform, two independent researchers carefully read the titles and abstracts, and those selected were submitted to a full reading and a thorough analysis. In case of doubt or discrepancy between them, a third researcher was consulted.

For the selection of articles, the recommendations of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)²¹ were used.

Data extracted from selected articles were transcribed into a validated instrument, which was adapted to meet the study proposal²². The instrument contains variables of interest to the research, and its items are: article title, publication journal, authors, study country, year of publication, study design, level of evidence, and main results.

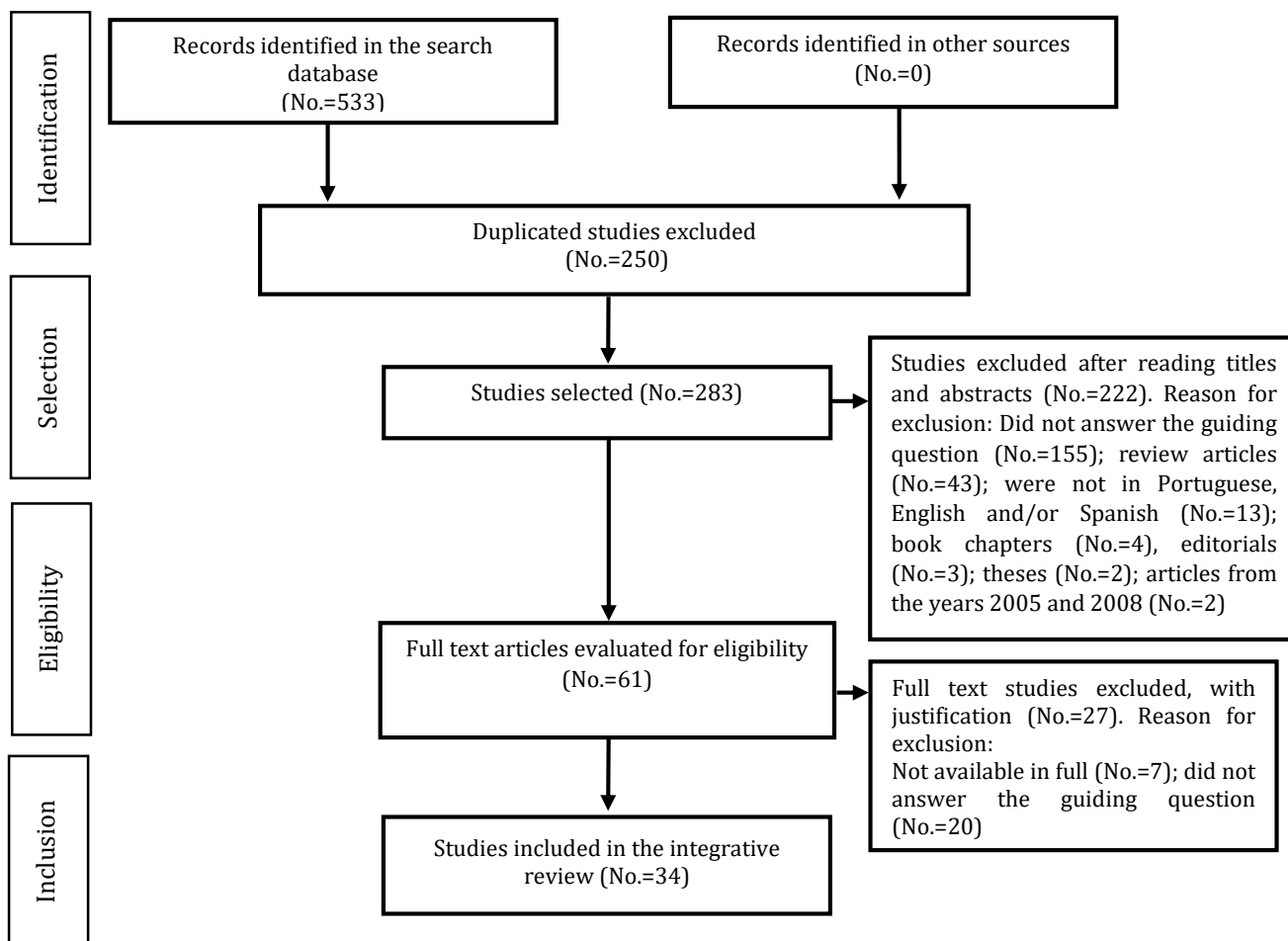
The proposal described by Melnyk and Fineout-Overholt²³ was adopted to analyze the research design and classify the level of scientific evidence in the articles. Level 1 - evidence from systematic review or meta-analysis of all randomized controlled clinical trials, or from clinical guidelines based on systematic reviews of randomized controlled clinical trials; Level 2 - evidence derived from at least one well-designed randomized controlled clinical trial; Level 3 - evidence obtained from well-designed clinical trials without randomization; Level 4 - evidence from well-designed cohort and case-control studies; Level 5 - evidence originating from a systematic review of descriptive and qualitative studies; Level 6 - evidence derived from a single descriptive or qualitative study; Level 7 - evidence from the opinion of authorities and/or report from expert committees.

The results were presented descriptively, and the content identified in the included articles was systematized and grouped into thematic categories, aiming at a synthesis of knowledge to allow researchers to obtain a new understanding of the phenomenon of scientific search and its applicability¹⁸.

In ethical aspects, the information extracted from the publications was accessed through databases, not requiring authorization for use, as the material are public domain.

RESULTS

In the electronic search in the seven databases consulted (LILACS=20, CINAHL=49, PSYCINFO=69; PUBMED=74, SCOPUS=91; WEB OF SCIENCE=107, EMBASE=123) 533 articles were found. After reading the titles and abstracts, 250 duplicates and 222 were excluded for not meeting the inclusion criteria, leaving 61. After reading in full, 27 articles were excluded from the sample: seven for not being available in full and 20 for not answer the guiding question. Consequently, 34 articles were included (Figure 1).

Figure 1. Article selection, according to PRISMA¹⁷ recommendations. Ribeirão Preto, SP, Brasil, 2019.

Of the 34 articles included, there was a predominance of studies from 2014 and 2018, with six publications each year. In both 2016 and 2017, five articles were published. In 2012, there were four publications and, in 2015, there were three publications. Both in 2011 and 2019, two articles were published, while 2009 generated only one article. Of the total number of articles, 27 were available in English, 5 in English, Portuguese and Spanish, and 2 in English and Portuguese. It is noteworthy that the largest number of articles were published in international journals (27 articles), and 7 articles were published in national journals (Table 2).

Regarding countries, Brazil stood out with the most studies developed on the topic (eight articles), followed by Sweden (six articles). The United States had four publications. China and Germany had three publications each. Iran and Taiwan had two publications each. England, Austria, Italy, Spain, Portugal and Canada published only one article each (Table 2).

Chart 2. Studies included in the integrative review, according to authors, journal of publication, country and year of publication, design, level of evidence and outcomes. Ribeirão Preto, SP, Brazil, 2019.

Authors	Journal	Country/ Year	Study design/Level of evidence	Main results
Bearn et al ²⁴	J Subst Abuse Treat	England 2009	Randomized, placebo-controlled study (No=82). Level II.	Auriculotherapy had no effect on withdrawal severity or craving when given as an adjunct to standard methadone detox treatment for opioid withdrawal symptoms.
Wu et al ¹¹	J Res Med Sci	China 2011	Blind randomized clinical trial (No=35 participants). Level II.	It was evident that both auricular acupuncture and body acupuncture were effective treatments in reducing anxiety in preoperative patients
Black et al ²⁵	J Subst Abuse Treat	Canada 2011	Blind randomized controlled trial (No=101). Level II.	Auriculotherapy through the NADA protocol (National Acupuncture Detoxification Association) was not more effective than simulation (sham points) or control of the treatment environment (relaxation) in reducing anxiety related to withdrawal from psychoactive drugs.
Prado; Kurebayashi; Silva ⁷	Rev. Latino- Am Enfermagem	Brazil 2012	Randomized controlled clinical trial (No=71 participants). Level II.	True auriculotherapy was found to have better responses than placebo in reducing stress, but further studies are recommended to re-evaluate sham points for stress.
Michalek-Sauberer et ²⁶	Clin Oral Investig	Austria 2012	Prospective, randomized, blinded study (No=182 participants). Level II.	Ear acupuncture reduced the state anxiety score from 54.7 ± 10.8 to 46.9 ± 10.4 (mean ± SD), being more effective than sham acupuncture, which reduced it from 51.9 ± 10.2 to 48.4 ± 10.0, for dental treatments.
Prado; Kurebayashi; Silva ⁶	Rev Esc Enferm USP	Brazil 2012	Single-blind randomized clinical trial (No=71 participants). Level II.	Auriculotherapy with shenmen and brainstem points was more effective in decreasing anxiety levels in nursing students compared to sham points.
Kurebayashi et al ²	Rev Latino-Am Enfermagem	Brazil 2012	Randomized controlled clinical trial (No=75 participants). Level II.	It was evident that the auriculotherapy treatment was positive in reducing stress levels in the nursing team, with better results for semi-permanent needles than for seeds.
Kurebayashi; Silva ¹⁰	Rev. Latino- Am Enfermagem	Brazil 2014	Controlled, randomized, single-blind clinical study (No=175 participants). Level II.	Individualized auriculotherapy without protocol was able to expand the scope of the technique to reduce stress when compared to protocol auriculotherapy.
Bergdahl; Berman; Haglund ¹⁴	J Psychiatr Ment Health Nurs	Sweden 2014	Descriptive study with a qualitative approach (No=15 participants). Level VI.	Auriculotherapy through the NADA protocol (National Acupuncture Detoxification Association) enabled a feeling of relaxation, well-being, peace, reduction of anxiety and drug and alcohol consumption in patients who are treated at a substance dependence outpatient clinic.
Chang; Sommers ¹⁷	Am J Addict	USA 2014	Three-arm randomized controlled trial (No=67 participants). Level II.	It was evident that both auricular acupuncture and the relaxation response enabled positive results to alleviate desire and anxiety among military veterans who are recovering from a substance use disorder.
Gagliardi et al ²⁷	Medical Acupuncture	Italy 2014	Randomized, double-blind, crossover study (No=20 participants). Level II.	This study demonstrated that real auricular acupuncture compared to simulated auricular treatment had a specific and measurable effect on the anxiety state in health volunteers.
Reilly et al ³	Dimens Crit Care Nurs	USA 2014	Study without randomization as a single pre- and post-test (quasi-experimental) group (No=76 participants). Level III.	It was found that auricular acupuncture is an effective intervention for the relief of stress and anxiety in health professionals and supports the increase in the capacity to provide care.
Wu et al ²⁸	J Altern Complement Med	China 2014	Descriptive observational pilot study (No=22). Level VI.	It was evident that four weeks of application of auriculotherapy enabled an improvement in the quality of sleep of patients undergoing hemodialysis with insomnia and less dependence on sleeping medications. However, these improvements were not preserved one month after treatment.
Kurebayashi; Silva ⁸	Rev Bras Enferm	Brazil 2015	Randomized controlled clinical trial (No=175 participants). Level II.	It was evident that individualized auriculotherapy was superior in effect than auriculotherapy with a protocol to reduce stress and improve quality of life in the nursing team.
lunes et al ²⁹	Evid Based Complement Alternat Med	Brazil 2015	Clinical, controlled, randomized, double-blind study (No=44 participants). Level II.	Anxiety (p<0.01) in the auriculotherapy group was significantly reduced. This group also showed a decrease in tender points in the posterior mandibular region (p=0.04) and on the right side of the submandibular region.
Rodríguez-Mansilla et al ¹²	Clin Rehabil	Spain 2015	Randomized controlled pilot study (No=120). Level II.	Auriculotherapy and massage therapy improved pain, anxiety and depression in elderly people with dementia. However, auriculotherapy had better results.
Lorent et al ³⁰	J Acupunct Meridian Stud	Germany 2016	Prospective clinical trial in parallel group (No=162 participants). Level III.	It was shown that both auricular acupuncture and progressive muscle relaxation can be useful interventions in reducing anxiety, tension, anger, but they did not elevate mood in these patients with a primary diagnosis of anxiety disorder or major depressive disorder.
Bergdahl et al ³¹	Sleep Disord	Sweden 2016	Prospective randomized controlled study (No=59). Level II	It was shown that cognitive behavioral therapy was superior to auriculotherapy in reducing insomnia symptoms.

Kuo et al ³²	Int J Nurs Stud	Taiwan 2016	Single-blind, randomized, controlled study (No=76 participants). Level II.	Auriculotherapy was found to be an effective pharmacological method to reduce anxiety and fatigue in post-cesarean women.
Klausenitz et al ³³	Plos One	Germany 2016	Prospective randomized, placebo-controlled, single-blind crossover study (No=44). Level II.	Both the auriculotherapy and the placebo procedure (placebo duct tape needles) reduced exam anxiety compared with no intervention in medical students. However, auriculotherapy produced stronger effects than the placebo procedure.
Ahlberg et al ³⁴	Subst Abuse Treat Prev Policy	Sweden 2016	Randomized clinical trial study (No=280). Level II.	No evidence was found that auriculotherapy is more effective than relaxation (listening to music in a silent environment) for anxiety, sleep, substance use problems or for reducing the need for additional addiction treatment in patients with drug use problems. substances.
Bergdahl et al ⁹	Eur J Integr Med	Sweden 2017	Prospective, randomized and controlled study (No=57 participants). Level II.	71% of the auriculotherapy (AA) group participants and 84% of the cognitive behavioral therapy (CBT-i) participants were able to discontinue hypnotic drug use after treatment. Anxiety and depression symptoms decreased in the AA group and the insomnia symptom decreased in the CBT-i group.
Carter et al ³⁵	Behav Sci (Basel)	USA 2017	Prospective randomized study (No=100 participants). Level II.	There was significant improvement in both treatment groups—NADA (National Acupuncture Detoxification Association) and control groups—for anxiety, depression, and maintenance of the patient's abstinence from tobacco, alcohol, and other drugs. However, only in the NADA group was there a significant improvement in quality of life.
Li; Zhang; Shi ³⁶	Biomed Res	China 2017	Randomized controlled clinical trial (No=86 participants). Level II.	It has been shown that traditional Chinese ear point therapy can lower blood pressure and improve anxiety. Antihypertensive efficiency in the observation group was higher than in the control group (p<0.05). Anxiety scores improved after the intervention.
Kurebayashi et al ³⁷	Rev Latino-Am Enfermagem	Brazil 2017	Parallel randomized controlled clinical trial (No=180 participants). Level II.	It was found that auriculotherapy through the APPA protocol (Auricular Protocol for Pain & Anxiety) reduced the anxiety levels of a nursing team after 10 sessions. However, the authors suggest further studies with new populations and in different contexts so that the results are confirmed.
Hedlund; Landgren ³⁸	Issues Ment Health Nurs	Sweden 2017	Qualitative study (No=9). Level VI.	Auriculotherapy was perceived by the participants with anorexia nervosa as a relaxing therapy that made it possible to reduce anxiety. Weight gain became easier to bear. The authors emphasize that the positive results are promising and recommend carrying out a quantitative study to assess the effect of auriculotherapy in psychiatric care.
Chueh; Chang; Yeh ¹³	J Nurs Res	Taiwan 2018	Quasi-experimental study (No=36 participants). Level III.	The use of the magnetic tablet at the 4-week shenmen point has been shown to be effective in improving the quality of sleep, anxiety and depressed mood in nursing students with sleep disorders.
Saffari. Khashavi; Valiani ¹⁵	Iran J Nurs Midwifery Res	Iran 2018	Clinical trial without randomization (No=56 participants). Level III.	The results indicated that auriculotherapy can be effective in reducing stress and improving the outcome of assisted reproductive treatment.
Mafetoni et al ¹⁶	Rev Latino-Am Enfermagem	Brazil 2018	Randomized, parallel and pragmatic clinical trial (No=102 participants). Level II.	The parturients in the auriculotherapy group had a lower level of anxiety using the Hamilton anxiety scale, and the authors suggest that this therapeutic resource can be used in obstetric practice.
Wunsch et al ³⁹	Acupunct Med	Germany 2018	Prospective pilot clinical study with non-randomized arm (No=62 participants). Level III.	Preoperative anxiety was reduced in the auricular acupuncture group the night before surgery (p<0.01) and this therapeutic resource was considered acceptable and viable for the treatment of preoperative anxiety.
Vieira et al ⁴⁰	Eur J Integr Med	Portugal 2018	Experimental, prospective, randomized, controlled and blinded study (No=69 participants). Level II.	Auriculotherapy appears to be effective in reducing academic test-related anxiety in college-level students according to the STAI Y1 (State Anxiety Inventory) (p = 0.031), VAS (Visual Analogue) (p = <0.01) and SN -TCM (Traditional Chinese Medicine) (p = < 0.01).
Buchanan et al ⁴¹	Dimens Crit Care Nurs	USA 2018	Study without randomization as a single pre-and post-test group (quasi-experimental) (No=112 participants). Level III.	Auriculotherapy enabled significant reductions in health professionals' anxiety-state and their involvement in work.
Pirnia et al ⁴²	Iran Psychiatry Sci	Iran 2019	Randomized, double-blind, simulation-controlled study (No=24 participants). Level II.	Auricular acupuncture had a significant effect on cortisol level as a primary outcome over four weeks of treatment. In addition, there was a significant reduction in suicidal ideation as a secondary outcome (all p-values <0.01).
Landgren et al ⁴³	Issues Ment Health Nurs	Sweden 2019	Qualitative study (No=24). Level VI.	Professionals participating in the study reported that auriculotherapy can alleviate symptoms of anxiety, sleep problems and depression, as well as reduce alcohol and drug withdrawal symptoms in patients with substance use problems.

Six thematic categories emerged: *Auriculotherapy in the care of anxious manifestations*; *Auriculotherapy in the care of depressive manifestations*; *Auriculotherapy for stress relief*; *Auriculotherapy in the care of the use and abuse of psychoactive substances*; *Auriculotherapy in the care of sleep disorders*; and *Auriculotherapy in the care of psychic manifestations associated with organic issues*.

Auriculotherapy in the care of anxious manifestations

Of the thematic categories listed, this included the largest number of articles. Of the six studies that aimed to assess the effect of auriculotherapy on anxiety in patients with substance use problems, four^{14,17,35,43} indicated that this integrative therapy made it possible to reduce anxiety levels, while two articles found no evidence that auriculotherapy is more effective than relaxation treatment in reducing levels of anxiety related to abstinence from psychoactive drugs^{25,34}.

In five studies^{6,13,29,33,40}, it was found that auriculotherapy was effective in reducing anxiety levels in university students. Three studies^{27,37,41} demonstrated that auriculotherapy was able to reduce the anxiety of health professionals and may contribute to the promotion of these individuals' mental health. Two studies^{11,39} sought to assess the feasibility of using auriculotherapy for the treatment of preoperative anxiety, and showed that this non-pharmacological therapeutic resource reduced levels of anxiety in preoperative participants, making it feasible for this purpose.

In other studies, auriculotherapy was used to treat anxiety in women during labor¹⁶ and post-cesarean³²; in patients with primary hypertension³⁶; in patients with insomnia⁹; in elderly people with dementia¹²; in patients with anorexia nervosa³⁸; in patients with anxiety disorder³⁰; as well as to reduce anxiety in patients before dental treatment²⁶. In these cases, auriculotherapy has been shown to be effective in reducing anxiety symptoms.

Auriculotherapy in the care of depressive manifestations

In two studies^{35,43}, it was found that auriculotherapy improved the symptoms of depression in people undergoing substance abuse treatment. Other studies have shown positive effects of this non-pharmacological therapeutic resource on depression symptoms in elderly people with dementia¹²; in patients with insomnia disorder⁹, in college students with sleep disorders¹³; but also in dysthymic patients⁴². However, an article³⁰ found that auriculotherapy did not improve mood in patients with major depressive disorder.

Auriculotherapy for stress relief

In this category, four studies^{2,3,8,10} addressed the use of auriculotherapy to reduce stress in health professionals. A study⁷ evaluated the effectiveness of true auriculotherapy and placebo auriculotherapy in reducing the stress levels of mid-level nursing students, demonstrating that true auriculotherapy had better responses (45.39%) than placebo (34.18%) in reducing stress in 71 participants. A study¹⁵ evaluated the effects of auriculotherapy in reducing stress in women with fertilization difficulties, and found that this integrative therapeutic resource significantly reduced stress and improved the outcome of assisted reproductive treatment.

Auriculotherapy in the care of the use and abuse of psychoactive substances

In this category, four studies^{14,17,35,43} found that auriculotherapy has shown positive results reducing the consumption of psychoactive substances and in withdrawal symptoms. However, one study²⁴ found that auriculotherapy had no effect on the severity of withdrawal or craving when given as an adjunct to standard methadone detox treatment for opioid symptoms, and two articles^{25,34} showed that auriculotherapy was no more effective than relaxation for the treatment of people with psychoactive substance use problems.

Auriculotherapy in the care of sleep disorders

In this category, a study¹³ found that auriculotherapy was effective in improving sleep quality in college students with sleep disorders. Another study²⁸ showed that auriculotherapy improved the quality of sleep of patients on hemodialysis with complaints of insomnia and less dependence on sleeping medications, although such improvements were not preserved one month after treatment. Other studies^{9,31} showed that cognitive behavioral therapy was more effective than auriculotherapy in reducing insomnia symptoms, and its authors emphasized that auriculotherapy should not be considered an independent treatment for insomnia.

Auriculotherapy in the care of psychic manifestations associated with organic issues

In this thematic category, a study²⁹ has shown that auriculotherapy was positive in reducing pain in university students with temporomandibular disorders and anxiety. Another study³⁶ showed that auriculotherapy can lower blood pressure in patients with anxiety. In these cases, which involve symptoms of anxiety capable of causing temporomandibular dysfunction and increased blood pressure, auriculotherapy has shown to be a promising therapy for reducing pain and blood pressure.

DISCUSSION

In recent decades, scientific productions have shown an increase in the interest in auriculotherapy as a non-pharmacological treatment method based on traditional Chinese medicine to alleviate anxiety manifestations⁹.

Although anxiety is an important natural response for human beings to a certain danger⁴⁰, it can become pathological, leading the person to express feelings of fear, insecurity, catastrophic thinking and increased alertness⁶. This can compromise their physical health, due to hormonal changes and the decrease in the activity of the immune system^{6,40,41}.

Regarding anxiety manifestations, it was observed in this study that this non-pharmacological treatment proved to be effective in most articles involving clinical situations of anxiety (surgeries, dental treatment, insomnia, dementia and anorexia nervosa). This finding is corroborated by another study⁴ which, in addition to finding benefits of auriculotherapy for anxiety, also reinforces the increase in scientific production in the area of auriculotherapy by health professionals, such as nursing, which seems to be open to inserting this therapy in their professional performance, as a way to contribute to the process of caring for their patients, as well as the dissemination of knowledge of this integrative practice in the health field.

The positive effect of auriculotherapy on anxiety can be explained by the somatotropic function, as a result of the presence of pluripont cells that have information from the whole organism in the pinna⁴⁰. In addition, the pinna has abundant innervation (trigeminal, facial, vagus, major auricle, and major and minor occiput nerves) which is related to the nervous system and stimulation of the acupoints in the ear. This information is transmitted to the brain regions essential for the regulation of anxiety (locus coeruleus, orbitofrontal cortex, hippocampus and amygdala).

Auriculotherapy enabled pain relief in patients with anxiety who had temporomandibular disorder. Anxiety may contribute to the development of temporomandibular disorder and pain related to this disorder may be chronic, affecting not only the peripheral nervous system, but also the central nervous system, causing a generalized perception of pain²⁹. This therapeutic resource has also shown positive results for the reduction of blood pressure, which is considered a type of psychosomatic illness in patients with anxiety³⁶.

It was observed that auriculotherapy can be used in a complementary way in cases involving temporomandibular disorders and hypertension, as it can give positive responses to both emotional and physical symptoms.

With regard to people with problems in the use of psychoactive substances, most studies^{14,17,35,43} found positive effects of auriculotherapy in reducing levels of anxiety and

consumption of psychoactive substances. However, some studies have shown^{25,34} that auriculotherapy was not more effective than relaxation therapy in reducing anxiety levels and had no effect in the treatment of drug addiction²⁴.

Inconclusive results regarding the effectiveness of auriculotherapy in the treatment of psychoactive drug addiction can be observed in another review study⁴⁴. Thus, it is crucial to carry out more scientific research on this topic, with extensive and rigorous clinical trials to confirm these results, as anxiety, as shown by one study²⁵, is a common symptom of withdrawal from psychoactive drugs that, if not treated, can contribute to the person's craving and relapse into drug use.

In depressive manifestations, a study⁵ showed a lack of research on the use of integrative practices, such as auriculotherapy, for the treatment of depressive symptoms, noting positive effects of using auriculotherapy, mindfulness meditation and reiki to treat depressive symptoms. This information could also be shown in this study, which found a low scientific production on this topic. Most studies showed positive effects of auriculotherapy on symptoms of depression associated with the use of psychoactive substances; in dementia in the elderly; in insomnia and sleep disturbance; as well as in dysthymic patients^{9,12,13,35,42,43}.

The positive symptoms of depression can be explained by the effects that auriculotherapy has on the autonomic nervous system, which can cause a decrease in brain activity in the limbic system, responsible for controlling emotions, with the regulation of this system through natural mechanisms of fundamental body for physical and emotional balance⁵.

It was observed that auriculotherapy is a promising therapeutic resource for depressive manifestations, but it is essential to carry out further investigations to prove its effectiveness, since the treatment for depression can use pharmacological drugs to eliminate the symptoms that manifest themselves in the physical body and emotional state⁴³, as well as resorting to psychotherapy, which enables a better compression of the problems experienced for the treatment of emotional states⁵. Thus, the more studies that find reliable evidence on the benefits of auriculotherapy in depression, the more it will be possible to expand the use of this therapy as a complementary resource to contribute to the process of caring for people with depression and to rebalancing their emotions.

Insomnia is one of the most common diseases in modern society, affecting in different degrees from 15% to 30% of adults worldwide, which can cause other comorbidities in the affected person, such as anxiety and depression⁹. In this study, divergences were observed regarding the benefits of auriculotherapy in relation to insomnia. For some studies, this therapeutic resource was effective in improving sleep quality¹³, but its effects did not remain after treatment²⁸ and others highlighted that auriculotherapy was not more effective than cognitive behavioral therapy (psychotherapeutic treatment that helps the person to change thoughts, emotions and behavior patterns that do not promote health) in reducing insomnia symptoms^{9,31}. This information coincides with the results found in a systematic review study⁴⁵ that showed that the benefits of auriculotherapy as a treatment for insomnia remain uncertain (there are articles that demonstrate benefits and others not). The authors of these studies mentioned, as a limitation, the low methodological quality of the studies. Thus, the need for further studies with appropriate methodologies is perceived so that they can offer clear conclusions about the effectiveness of auriculotherapy for insomnia.

In turn, stress is a process that can be experienced by a person in a positive or negative way. When stress levels persist intensely, they can cause physiological, endocrine, immunological and neurological-pathological changes in the individual, making them liable to illness and harm to their quality of life and productivity⁷. In this study, in all articles that involved the topic^{2,3,7,8,10,15}, auriculotherapy was shown to be effective in reducing stress levels. This fact can be explained because, as shown in a study¹⁵, auriculotherapy can reduce stress by releasing internal opioids and adjusting the performance of the sympathetic nervous system.

Another study⁴⁶ also showed that this non-pharmacological therapeutic resource has shown positive effects for the improvement of symptoms related to post-traumatic stress disorder in people who had traumas resulting from natural disasters, becoming a promising therapeutic resource for the promotion of mental health in large-scale natural disasters.

Although most of these studies show promising results from the use of auriculotherapy in the treatment of anxiety, depression and stress, there are some differences in relation to the treatment of insomnia and psychoactive substances. In addition, the authors pointed out limitations, such as: sample size (there is a need for a larger number of participants)^{3,6,7,12-14,16,17,22,26,28,29,31-35, 37,39,40,42}; placebo effect (related to the effect of the group environment or the relationship that the therapist establishes with the participant)^{6,30,31,43}; variability of maps in the choice of sham points (make the choice of auricular sham points difficult)^{6,7,25}; treatment time (increase the number of sections and treatment time so that the residual effects of individualized auriculotherapy can be carefully evaluated)^{8,10,24,32}; lack of stimulation by patients of the ear points, where the seeds were applied (the researchers instruct the participants to stimulate the acupoints with moderate digital pressure to achieve better results, however, they cannot verify if this instruction is being followed by the participants)¹⁵; no survey of stressors and no delimitation of variables that showed uniformity regarding the problems experienced by the participants². The articles^{11,27,36,38} did not present research limitations.

However, it was found in this study, in cases involving insomnia and the use of psychoactive drugs, the benefits of auriculotherapy were inconclusive. Thus, it is crucial that health professionals and researchers in the field of auriculotherapy expand research with more accurate methodologies involving such topics, to provide a clearer understanding of the use of this complementary therapy for these cases, as well as avoid possible methodological weaknesses that may compromise the results of the studies²⁴.

Most studies included in this integrative review were performed using quantitative methods. It is suggested that more qualitative studies be carried out with a view to understanding people's experience of care in auriculotherapy for the purpose of promoting mental health.

Despite the low production of qualitative studies identified in this integrative review study, some of them^{14,28} showed qualitative benefits, such as improved sleep, sense of well-being, calm and relaxation, pointing out that the effects of auriculotherapy are often perceived in a subjective and singular way, which broadens the understanding of mental health according to the biomedical perspective centered on the disease, on the perception of well-being and psychosocial comfort.

Most of these studies brought a view of auriculotherapy centered on Western medicine, in the biomedical model, on an explanatory understanding of mental health based on psychic manifestations that tend to configure themselves as psychic illnesses, such as anxiety and depression. Thus, it is essential that future studies involving auriculotherapy can provide explanations from an Eastern perspective, based on the energy balance between the *YIN/YANG* duality, which helps to understand the disease processes from the imbalance between these energies, according to assumptions of Eastern medicine.

CONCLUSION

The evidence raised reported on the use of auriculotherapy in mental health care, demonstrating positive results of this non-pharmacological therapeutic resource in anxiety and stress manifestations.

Regarding the treatment of depressive manifestations, there have been few publications on the subject, but the results of the studies showed that auriculotherapy is a promising resource, which can be used for this purpose. However, more studies are needed to confirm these results.

With regard to the treatment of insomnia and dependence on psychoactive drugs, the benefits of using auriculotherapy in relation to these cases were inconclusive; that is, some studies have shown positive results and others have not. It is suggested that studies be expanded in search of better evidence on the effectiveness of this non-pharmacological treatment in these cases.

Furthermore, the studies pointed out important limitations regarding sample size, placebo effects, and difficulty in choosing sham points due to the variability of maps, among others.

Thus, it is considered essential to carry out further research that emphasizes these aspects in search of better evidence on the use of auriculotherapy as a complementary therapeutic resource for the promotion of mental health.

However, auriculotherapy proved to be an integrative practice that can be used by health professionals who have training in the area of acupuncture and/or training to use this technique as a therapeutic resource that complements their care practice. Thus, this therapy can contribute to the integrality of care for people who have psychic manifestations related to anxiety, depression and stress.

In cases involving insomnia and the use of psychoactive drugs, evidence has been mixed regarding the effectiveness of this therapy. It is noted that, for the most part, the studies covered by this review are centered on a biomedical understanding, from the perspective of Western medicine. It is suggested to expand future studies in a perspective of oriental medicine, in search of an energetic balance between the duality of *YING/YANG* energies.

In this case, it is up to the health professional, through their clinical reasoning, to decide whether or not to use this ancient resource, always taking into account the perceptions of their patients about the effects of this treatment on their health and quality of life.

This study is limited by including articles that were indexed only in the electronic databases/database selected as part of the inclusion and exclusion criteria, which may have limited the findings. Furthermore, articles in English, Portuguese and Spanish were also included, making it necessary for future studies of integrative review to address the topic with the inclusion of other languages to expand the findings. On the other hand, it presents an overview of production in the area, which in itself can contribute to future productions and interventions in society, especially in terms of quality of life.

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Associated Publisher: Vania Del Arco Paschoal

CONTRIBUTIONS

José Henrique da Silva Cunha, Francisca Bruna Arruda Aragão, Larissa Barros de Souza and Regina Célia Fiorati contributed to the design, collection and analysis of data, writing and reviewing. **Heloísa Cristina Figueiredo Frizzo** collaborated in the writing and reviewing.

How to cite this article (Vancouver)

Cunha JHS, Aragão FBA, Souza LB, Frizzo HCF, Fiorati RC. The use of auriculotherapy in mental health care: an integrative review. *REFACS* [Internet]. 2022 [cited in *insert day, month and year of access*]; 10(1):156-70. Available from: *insert access link*. DOI: *insert DOI link*

How to cite this article (ABNT)

CUNHA, J. H. S.; ARAGÃO, F. B. A.; SOUZA, L. B.; FRIZZO, H. C. F.; FIORATI, R. C. The use of auriculotherapy in mental health care: an integrative review. **REFACS**, Uberaba, MG, v. 10, n. 1, p. 156-70, 2022. DOI: *insert DOI link*. Available from: *insert access link*. Access in: *insert day, month and year of access*.

How to cite this article (APA)

Cunha, J.H.S., Aragão, F.B.A., Souza, L.B., Frizzo, H.C.F., & Fiorati, R.C. (2022). The use of auriculotherapy in mental health care: an integrative review. *REFACS*, 10(1), 156-70. Retrieved in *insert day, month and year of access* from *insert access link*. DOI: *insert DOI link*.

