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Artigo

Essential Oils as a Resource to Support the Mental Health of Academics and Health-Care Professionals

Camila Caroline da Silva[1]; Laura Vicentim Berbert[2]; Marna Eliana Sakalem[3]

Abstract: Stressful situations, common in the current world scenario, culminate in negative impacts on the mental health. Due to the busy routines, with many hours of work and study each week, academics and health care workers are among the most affected by mood and anxiety disorders, with an increasing incidence of substance abuse. Besides psychotropic medications to combat psychosomatic disorders, other intervention possibilities with fewer reports of adverse effects can be used, such as essential oils (E.O.s). Objective: To conduct a literature review to investigate possible positive effects of selected essential oils on physical and mental impacts arising from stress and anxiety. Methods: A literature review was conducted using Google Scholar, SciELO, and PubMed databases. Original papers that contained clinical research evaluating the effects of E.O.s on physical and mental health were selected. Results: The use of essential oils, most notably lavender (8 studies), lemongrass (6 studies), bergamot (3 studies) and cypress (2 studies), demonstrated to be an effective alternative for the treatment of anxiety, stress, and depression. Conclusion: The use of essential oils is effective in the support of mental disorders and is thus of great relevance to the general well-being of academics and health care professionals.

Descritores: Aromatherapy, Mental Health, Quality of life, Health personnel, Students

[1] Acadêmica de Medicina – Universidade Estadual de Londrina (UEL). Londrina, Paraná, Brasil. ORCID: https://orcid.org/0000-0003-0530-0881. E-mail: camila.caroline@uel.br;

[2] Graduada em Enfermagem – Universidade Estadual de Londrina (UEL). Londrina, Paraná, Brasil. ORCID: https://orcid.org/0000-0003-3121-0003. Londrina, Paraná, Brasil. E-mail: laura.vicentim@uel.br

[3] Docente de Anatomia – Departamento de Anatomia, Centro de Ciências Biológicas, Universidade Estadual de Londrina (UEL). Londrina, Paraná, Brasil. ORCID: https://orcid.org/0000-0002-3143-4093 . E-mail: marna@uel.br

Óleos Essenciais como Alternativa Viável para o Cuidado da Saúde Mental de Acadêmicos e Profissionais da Saúde

Resumo: Eventos estressantes, tão comuns no atual cenário mundial, culminam em impactos negativos na saúde mental da população. Devido às rotinas agitadas, com muitas horas de trabalho e estudo semanais, acadêmicos e profissionais da saúde estão entre os mais acometidos por transtornos de humor e de ansiedade, além de apresentarem incidência crescente de abuso de substâncias. Além do uso de medicamentos psicotrópicos para combater distúrbios psicossomáticos, há outras possibilidades de intervenção terapêutica, com menos relatos de efeitos adversos, como os óleos essenciais (O.E.s). Objetivo: Realizar uma revisão de literatura para investigar possíveis efeitos positivos de alguns óleos essenciais selecionados sobre os impactos físicos e mentais decorrentes de estresse e ansiedade. Métodos: Foi realizada uma revisão bibliográfica de pesquisas clínicas, consultando as bases de dados Google Scholar, SciELO e PubMed. Resultados: O uso de óleos essenciais, principalmente lavanda (8 estudos), capim-limão (6 estudos), bergamota (3 estudos) e cipreste (2 estudos) tem se mostrado uma alternativa eficaz para o tratamento de ansiedade, estresse e depressão. Conclusão: O uso de óleos essenciais provou ser eficaz contra transtornos mentais e, portanto, é de grande relevância para o bem-estar geral de acadêmicos e profissionais de saúde.

Palavras-chave: difusor de óleo essencial; aromaterapia; distúrbios de ansiedade; Transtornos de Humor; insônia; alunos

Introduction

Aromatherapy is a natural method that uses plant oil extracts in the form of essential oils (E.O.s) and has excellent results on physical and mental well-being. Because of the broad effects of E.O.s, their effectiveness in supporting people with mental health conditions has been studied.

In recent years, the COVID-19 pandemic was an example of a stressful situation experienced worldwide. Due to the rapid spread of the new coronavirus, the control of agglomerations and social distancing were the most effective confrontation and prevention measures. The implementation of such measures was necessary due to the sanitary conditions and the risk of collapse of the Health System[(1)]. Such routine adjustments culminated in financial difficulties and evident changes in family and professional/academic dynamics, in addition to the emotional and mental impact of social isolation itself [(2)]. Mental disorders demand follow-up and interventions, which are often

accompanied by unwanted effects and high financial cost. Thus, it is possible that the use of E.O.s may serve as a support in the treatment of such disorders.

Methodology

Given the above, the objective of this article was to present an updated literature review on the effects of aromatherapy on the physical and mental health of academics and health care workers. An active search of Google Scholar, SciELO, and PubMed databases was conducted, prioritizing original papers that contained clinical research and that evaluated the effects of E.O.s on physical and mental health. Articles from the last decade were prioritized, so that the narrative review would provide an up-to-date overview of aromatherapy. First, we present an overview of the relationship between stress and mental disorders. Next, we outline an overview of aromatherapy, with a focus on its use in the treatment of mental disorders. Then, we present the specific contributions of the most studied E.O.s. Finally, we present perspectives for future studies.

The impact of stress and mental disorders

Stressful events negatively impact physical and mental health and can lead to the development of various types of mental disorders. The consequences are perceived in the overall health of the individual, including sleep disturbances, cognitive problems and in the concentration and attention levels, among others) [3,4]. The COVID-19 pandemic is a good example of a stressful event experienced globally.

The advent of the pandemic has significantly increased the amount and severity of mental and mood disorders reports [5], with the most recurrent complaints being related to anxiety, depression, stress, sleep disturbances, and difficulty concentrating [6].

The increase in such reports was most often observed in people of different social classes, in different forms and intensities [7]. Groups that are particularly vulnerable to these effects are college students and health care workers [2,8] The most reported mental disorders were anxiety and stress, closely followed by depressive states [8]. The persistence of social distancing and adaptation to telework exemplify some of the changes that have intensified these harms [8].

Stress is a set of stressful, psychophysiological changes that occur from facing complicated, difficult, and threatening situations [9,10]. Stress and anxiety go together, with one usually occurring as a result of the other [11,12]. Recent research with hospital nurses, conducted before the pandemic, indicated that almost 80% of these professionals had some form of stress-related illness or disorder [13], which often leads them to request sick leave[14].

Studies about the prevalence of stress among undergraduate students indicate high levels of stress and anxiety, comparable to those observed in health care professionals, and which tend to become more frequent throughout university life [11,12]. There is data indicating that more than 20% of medical students show high levels of anxiety throughout their course [11].

Psychosomatic changes affect many individuals [15], but during the COVID-19 pandemic, their incidence was exacerbated both in people previously diagnosed with psychiatric disorders and in previously healthy individuals [16]. With the imposition of a drastic routine change, the fear of the pandemic situation, and the need to find ways to cope with reality, an expressive increase in the consumption of alcohol and other licit and illicit drugs was also observed [17].

Outlining an overview of the student and healthcare worker population, studies have shown declines in academic performance due to distractions in the quarantine environment, overload, sleep alterations, dietary changes, and constant worry [8]. Different studies indicate cognitive function impairment in this population, directly related to lower academic performance [18,19]. Among health care workers, physical and mental fatigue has led to a considerable increase in the prevalence of burnout syndrome due to a constant feeling of lack of control and stress resulting from the work environment and daily exposure to the virus [18].

Concomitant with the new diagnoses, especially of depression and anxiety, the difficulties of coping with these circumstances and negative changes in behavior arise, leading to the use/abuse of licit and illicit substances [18,20] The use of conventional methods of intervention, such as behavioral and/or drug therapy with psychotropic drugs, is also growing [17]. Although very effective, these approaches do not have high compliance because of the high cost and adverse effects of the medications [4,21]. Thus,

the search for viable and cost-effective alternatives for coping with mental and mood disorders is crucial.

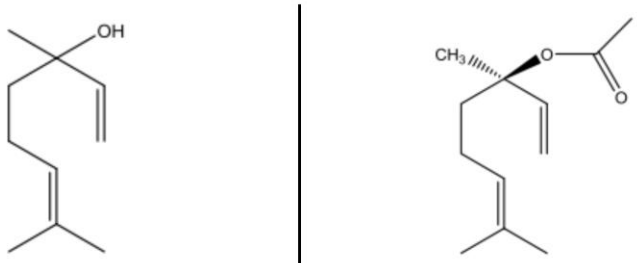
Aromatherapy as an ally in the fight against mental disorders

Regarding psychological disorders, depression is one of the most frequent among health care students and academics [8]. Many times, the use of medications is not enough, and it is necessary to include non-pharmacological measures to improve the patient's general condition [22], such as the use of E.O.s.

The use of E.O.s for therapeutic purposes is an ancient practice, used by great civilizations and present in medicine for generations [23]. Aromatherapy was first introduced for these purposes in 1920 by the chemist René de Gattefossé. He reported improved recovery from burns after the application of lavender oil, raising interest in the possible effects of this and other vegetable oils [24]. From then on, the valorization of aromatherapy as a therapeutic method and an efficient strategy for health promotion culminated in areas of study dedicated to researching these effects, as well as regulating the profession of aromatherapists through the creation of associations in Brazil – Brazilian Association of Aromatherapy and Aromatology (ABRAROMA) [25] – and abroad – The Aromatherapy Organizations Council (UK) [26].

The preservation or restoration of mental well-being is one of the main properties of E.O. inhalation [27]. The increasing number of studies on E.O.s has allowed the discovery of the major chemical compounds in each plant species, which remain present in the extractions that generate the E.O.s [28]. These studies enable the expansion of knowledge about the expected effects of the E.O.s. Linalool and linalyl acetate are examples of compounds with pharmacological effects on the nervous system. These compounds are prominent in multiple medicinal plant species, such as lavender and mint (28), and their structural formulas can be seen in **Figure 1**.

It is important to note that linalool is present in dozens of plant species, especially in those from the North and Northeast regions of Brazil, including mandarin, bergamot, jasmine, and basil. These species are famous in aromatherapy for their sedative and general action on the central nervous system [29,30].



a) Linalol b) Acetato de linalila

Figure 1. Main chemical compounds found in *Lavandula spp.*, responsible for its pharmacological effects. (Adapted from 32)

Among the hundreds of essential oils that promote mental health benefits, a few stand out. Lavender (*Lavandula officinalis*) is among the most studied and widespread plant species in the world, given the discoveries about the therapeutic impacts of E.O.s [24] and its growing relevance in treating mental disorders by presenting a calming effect [31] and fighting anxiety [32]. In addition, we can mention melaleuca, with antibacterial [24], anti-inflammatory, and antifungal effects [33]; lemongrass, with antimicrobial and relaxing effects (18); and clove, with antimicrobial, stimulating, and antioxidant effects [27,34].

Thereafter, several E.O.s will be presented along with published data from clinical studies endorsing their beneficial action on mental health. A summary of the effects of each plant species can be found in **Table 1**.

Table 1. General descriptive data of the main E.O.s used in mental health care, with their respective pharmacological effects

Essential Oil	Species	Therapeutic effects*	Reference
Lavender	*Lavandula officinalis, Lavandula angustifolia, Lavandula hybrida*	Anxiolytic, antidepressant, sedative, antibacterial, antifungal.	(22,28,35)
Lemongrass	*Cymbopogon citratus*	Anxiolytic, sedative, anticonvulsant, antibacterial.	(36)
Bergamot	*Citrus bergamia*	Anxiolytic, antifungal and anthelmintic, and treatment for insomnia	(4)
Cypress	*Cupressus sempervirens*	Anti-inflammatory and antiseptic	(37,38)

*The effects shown depend on the route of use, dose, and individual.

Lavender

Lavender is one of the most researched and widespread plants in the world, characterized as a pioneer species in aromatherapy studies and in the discoveries of the therapeutic impacts of E.O.s [39]. Its benefits were initially identified in the aid of wound healing (40), but lavender has diverse uses. Nevertheless, its uses for mental health benefits are the most expressive, with anxiolytic and antidepressant effects.

The anxiolytic effects are more significant in cases of mild to moderate anxiety and are conditioned to each stressful environment/situation to which the individuals are exposed. The use of lavender to manage anxiety is often associated with the sedative and relaxing properties of this oil, similar to the expected effects of benzodiazepines [28].

Research on the relevance of lavender use for physical and emotional well-being is often conducted comparing two different groups, in which one is exposed to the E.O. and the other is used for control [41]. In such manner, it is possible to see the anxiolytic potential of lavender in different groups of evaluated patients, considering various forms of application (inhalation, cutaneous, oral), in addition to other benefits linked to anxiety treatment, such as improved mood and sleep quality [28].

Lavender (*Lavandula sp.*) E.O. has the greatest range of positive effects on mental disorders. As its potential action is on the limbic system [42], lavender has analgesic properties [22] and brings a state of relaxation, sedation, and well-being – a result of the components linalool and linalyl acetate [35].

Studies have shown that lavender E.O. can be used by inhalation or by direct application to the skin [42], and that it is beneficial in the long term, even more so when combined with other non-pharmacological measures for the treatment of depression, such as physical exercise [22].

Lemongrass

Lemongrass is a species traditionally used in all continents of the world. Its use is wide, and its effects can be achieved in different ways, such as infusion, teas, and diffusion [43]. The lemongrass (*Cymbopogon citratus*) E.O. is effective against insomnia and contributes to the overall improvement of sleep quality, and in fighting stress.

Among the biochemical components of this oil, citral is the most expressive in quantity, with potential antibacterial and antioxidant effects. Lemongrass E.O. also has an action on the nervous system, as it has anxiolytic, sedative, and anticonvulsant effects [36]. These effects are promising in the substitution or association of synthetic drugs with plant species [44,45].

Bergamot

Among the most widely used E.O.s in mental health support, bergamot (*Citrus bergamia*) also demonstrates positive results on individuals with anxiety [4]. Studies indicate that these benefits are linked to the plant component linalool [46]. Studies have also shown new properties of the oil, such as reducing insomnia and potent action on microorganisms - among them fungi and helminths [4] and its connection to improved cognitive function in patients diagnosed with Alzheimer's disease [47].

Cypress

Although little studied, cypress (*Cupressus sp.*) E.O. contains properties against various microorganisms, as well as anti-inflammatory function. It is effective in treatment for improving human concentration and systemic circulation [38], and it is also considered a great source of energy [48].

Future perspectives

The benefits arising from the use of E.O.s are related to the type of oil applied, since many are already known for their specific effects and mechanisms of action. The positive notoriety of the use of natural substances in stressful moments will contribute to a greater interest of the scientific community and the general population, and consequently lead to credibility and the dissemination of knowledge about aromatherapy. These aspects are of great relevance considering how mental health is negatively impacted in aversive situations, such as the COVID-19 pandemic and the long routines

faced by students and health care professionals. Thus, coping strategies to support the population's well-being and quality of life are a real growing demand.

In this sense, E.O.s stand out as promising tools to adapt and face similar future situations, such as new pandemics. This is possible considering the history of aromatherapy's effectiveness in promoting emotional well-being in the face of adverse circumstances. However, it is important to stress that great caution is needed in indiscriminate use. Despite being a natural product and the false belief that "what is natural is not harmful" [49], the report of adverse reactions to the use of high doses of E.O.s by dispersion is possible, although rare. There are also complications due to the incorrect use of E.O.s directly on the skin or even by ingestion, which often cause more harm than benefits [50]. Great care and knowledge are needed for the indication of each E.O., as well as attention to signs of possible unwanted or allergic reactions.

Furthermore, considering the safe use of E.O.s, they have been proven to be a very valuable approach in supporting mental health. Considering a significant rise in reports of mood and anxiety disorders, and psychotropic substance abuse, particularly by people whose routine is already stressful, such as academics and health professionals, there is a real prospect of growth in the search for alternatives that have scientific support and that promote well-being and the maintenance of mental health.

Conclusion

Stress has become increasingly present in everyday life and adverse situations tend to be unpredictable. Thus, strategies to combat and support mental health are always necessary. Several E.O.s have reported effects on mood improvement and anxiety control, and are strong allies in fighting stress. Considering the need for appropriate and conscious use, E.O.s present great potential to balance the busy routine of the 21st century.

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