THERAPEUTIC USE OF MATRICARIA *CHAMOMILLA L.* IN GENERALIZED ANXIETY DISORDER

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Abstract

Generalized Anxiety Disorder (GAD) is a chronic psychiatric condition that significantly compromises the quality of life of affected individuals. Given the limitations inherent in conventional therapies, there is a growing interest in herbal remedies such as *Matricaria chamomilla* L., recognized for its anxiolytic properties. This study aims to examine the scientific evidence regarding the clinical efficacy of *Matricaria chamomilla* L. in the treatment of Generalized Anxiety Disorder, addressing its mechanisms of action, safety profile, and viability as a complementary therapy. A qualitative systematic review was developed, guided by the PRISMA protocol. The searches encompassed the PubMed, LILACS, and SciELO databases, including publications from 2021 to 2026, with selection based on eligibility criteria and content analysis according to Bardin. Fourteen studies were included in the study. Anxiolytic effects of *Matricaria chamomilla* L. were observed, linked to the modulation of the GABAergic system and the presence of flavonoids, with improvement in anxiety symptoms, sleep quality, and general well-being, accompanied by a reduced occurrence of adverse effects. *Matricaria chamomilla* L. showed therapeutic potential in the management of GAD (Generalized Anxiety Disorder), with an adequate safety and

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efficacy profile as a complementary therapy. However, more rigorous and standardized research is needed to consolidate its evidence-based clinical application.

Keywords: *Matricaria Chamomilla*, Chamomile, Anxiety, Generalized anxiety disorder, Phytotherapy, Natural treatment.

INTRODUCTION

Characterized by excessive, persistent, and difficult-to-control worry, Generalized Anxiety Disorder (GAD) represents a chronic psychiatric condition accompanied by various somatic and cognitive symptoms, including insomnia, fatigue, irritability, muscle tension, and impaired concentration. Such manifestations have a significant impact on quality of life, social performance, and the work capacity of affected individuals, generating a high burden of morbidity. In addition, the disorder has a fluctuating and prolonged course, with a low rate of spontaneous remission, a circumstance that reinforces its importance as a relevant public health problem (Sales et al., 2024; Silva, 2021).

The lifetime prevalence of GAD is estimated to range between 3% and 6%, and may exceed these values in certain populations, with greater occurrence among young adults and predominance in females. Recent data indicate a relevant increase in the frequency of anxiety disorders, especially in the period following the COVID-19 pandemic, a phenomenon attributed to psychosocial, economic, and environmental factors. Despite the magnitude of the problem, underdiagnosis still prevails in certain groups, particularly among older adults, indicating failures in the processes of detection and clinical management of the condition (Bastos et al., 2024; Casemiro; Moura, 2025).

The therapeutic management of GAD is largely based on the combination of psychotherapeutic interventions, with emphasis on cognitive-behavioral therapy, and pharmacological resources. Among the most commonly used drugs are Selective Serotonin Reuptake Inhibitors (SSRIs), Serotonin and Noradrenaline Reuptake Inhibitors (SNRIs), benzodiazepines, and buspirone. Although these interventions demonstrate proven clinical efficacy in attenuating anxiety symptoms, their use is often

limited by undesirable effects, such as excessive sedation, risk of dependence, tolerance, and poor adherence to treatment. Furthermore, the therapeutic response is heterogeneous, and it is not uncommon for a significant proportion of patients not to achieve complete remission, which highlights relevant gaps in the effectiveness of traditional approaches (Fonseca et al., 2024).

In this context, there has been a growing search for complementary therapies, especially herbal medicines, in the treatment of anxiety disorders. This movement stems not only from the search for alternatives with better tolerability, but also from cultural determinants and the expansion of integrative health practices, notably in low- and middle-income countries. In the Brazilian context, especially in the Northern Region, the use of medicinal plants is deeply rooted in the daily lives of populations, which underscores the importance of rigorous scientific evaluations of their efficacy and safety (Gomes et al., 2025).

Among the most prominent medicinal species is *Matricaria chamomilla* L. (chamomile), belonging to the Asteraceae family and widely valued for its anxiolytic, anti-inflammatory, and antioxidant attributes. Its pharmacological effects derive from the presence of bioactive compounds, especially flavonoids and terpenes, which influence the Central Nervous System through the modulation of neurochemical pathways such as the GABAergic and serotonergic systems, as well as possible interference with the hypothalamic-pituitary-adrenal axis. These mechanisms provide biological plausibility for its use in anxiety management (Sales et al., 2024; Gomes et al., 2025).

Despite the widespread use of this plant and the pharmacological consistency of the proposed mechanisms, the clinical evidence available on the efficacy of *Matricaria chamomilla* L. in the treatment of GAD remains inconsistent and, in several cases, methodologically fragile. Clinical studies show considerable heterogeneity with regard to design, sample size, standardization of interventions, doses used, and instruments for measuring outcomes, which makes comparison between results particularly difficult. Additionally, some findings suggest that the observed effects may be more closely related to

nonspecific sedative properties than to anxiolytic action itself, raising questions regarding the plant's actual clinical effectiveness (Fonseca et al., 2024).

Conversely, certain studies present encouraging results, indicating a significant reduction in anxiety symptoms and gains in outcomes related to quality of life, which supports the existence of relevant therapeutic potential. However, methodological variability and the lack of consensus in the literature limit the strength of the conclusions and reinforce the need for critical syntheses of the available evidence.

Given this scenario, it is imperative to conduct systematic analyses that enable a careful evaluation of the clinical efficacy of *Matricaria chamomilla* L. in the management of Generalized Anxiety Disorder. Accordingly, the present study aims to analyze the scientific evidence regarding the clinical efficacy of *Matricaria chamomilla* L. in the management of Generalized Anxiety Disorder.

METHODOLOGY

With the aim of critically analyzing the scientific evidence on the clinical efficacy of *Matricaria chamomilla* L. in the management of GAD, a qualitative systematic literature review was conducted. The methodological pathway of the study was guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines, an instrument that ensures rigor, transparency, and reproducibility throughout all stages of the investigation.

To structure the guiding question, the PICO strategy was adopted: the population consisted of individuals with anxiety disorders or anxiety symptoms; the intervention corresponded to the use of *Matricaria chamomilla* L.; the comparator included placebo, absence of intervention, or conventional treatment; and the outcome of interest was the reduction of anxiety symptoms and overall clinical improvement.

The bibliographic survey covered the Latin American and Caribbean Literature in Health Sciences (LILACS), Public Medical Literature Analysis and Retrieval System Online (PubMed), and Scientific

Electronic Library Online (SciELO) databases, all accessed through the Virtual Health Library (BVS). Controlled descriptors (DeCS/MeSH) were combined with free terms using the Boolean operators AND, OR, and NOT, in order to broaden and refine the results. The search strategy included combinations such as: ("Matricaria chamomilla" OR camomila) AND (ansiedade OR "transtorno de ansiedade generalizada" OR "generalized anxiety disorder") AND (fitoterapia OR "herbal medicine" OR "phytotherapy"), duly adapted to the specificities of each database. The time frame comprised publications from 2021 to 2026, in Portuguese, English, and Spanish.

The review corpus included original scientific articles available in full that directly addressed the use of *Matricaria chamomilla* L. in the management of anxiety, especially in the context of GAD, with experimental, observational, or clinical trial designs. Duplicate studies, undergraduate final papers, dissertations, theses, conference abstracts, editorials, letters to the editor, book chapters, government publications, and works without a direct relationship to the object of study were excluded.

The selection process was organized into sequential stages, according to the PRISMA protocol. After the identification of records in the databases, duplicates were removed. In the next stage, titles and abstracts were read for initial screening, with the exclusion of irrelevant studies. Potentially eligible articles underwent full-text reading and careful evaluation against the inclusion and exclusion criteria.

Only studies that fully met the pre-established criteria were incorporated into the review. The selection flow—identification, screening, eligibility, and inclusion—was organized in accordance with PRISMA recommendations.

Data processing used the Content Analysis technique proposed by Bardin, whose stages comprise pre-analysis, exploration of the material, and interpretation of results. Initially, a floating reading of the selected studies was carried out in order to become familiar with the content and delimit the research corpus. Subsequently, the data were coded and categorized, allowing the identification of thematic units related to the efficacy of *Matricaria chamomilla* L. in reducing anxiety symptoms. Finally, the findings

were subjected to critical interpretation, seeking to highlight convergences, divergences, and gaps in the scientific literature.

Because it was based exclusively on secondary data in the public domain, without direct involvement of human beings, the integrative review was exempt from submission to the Research Ethics Committee, under Resolution No. 510/2016 of the National Health Council. It should be noted that ethical principles related to scientific integrity and copyright were observed, ensuring proper referencing of the sources consulted, in accordance with Resolution No. 466/2012.

RESULTS

The searches conducted in the databases resulted in a total of 178 identified records, distributed among PubMed (61), LILACS (78), and SciELO (39). After the exclusion of duplicates, 152 articles were forwarded for screening. Reading titles and abstracts resulted in the elimination of 118 studies for not meeting the eligibility criteria, leaving 34 articles for full-text evaluation. Of these, 14 met all the defined criteria and composed the final sample of the integrative review.

The selected studies exhibited varied methodological designs, including randomized clinical trials, observational research, experimental studies, and literature reviews, with a predominance of clinical trials focused on investigating the efficacy of *Matricaria chamomilla* L. in controlling anxiety symptoms. The populations studied included adults diagnosed with GAD and individuals with mild to moderate anxiety manifestations.

In order to organize and facilitate understanding of the findings, a synthesis chart of the 14 included studies was prepared, gathering information on authorship, year of publication, type of design, objectives, and main results. This instrument allowed a structured visualization of the available evidence, favoring comparison between different methodological designs and the identification of patterns in the reported findings.

Chart

Synthesis of evidence from the included studies (n=14)

Author/Year	Type of study	Objective	Main results
Barbosa et al., 2021	Observational study	To evaluate the impact of benzodiazepines on quality of life in GAD	Demonstrated improvement in anxiety symptoms, but with adverse effects and dependence, reinforcing the need for alternative therapies
Mello & Mendonça, 2025	Qualitative study	To analyze professionals' perceptions of herbal medicines	Professionals recognize efficacy in mild cases of anxiety and good patient acceptance
Abreu et al., 2024	Qualitative study	To evaluate medicinal plants in anxiety	Identified chamomile as one of the main species with anxiolytic potential
Almeida et al., 2025	Cross-sectional study	To investigate the use of medicinal plants by students	High prevalence of herbal medicine use for anxiety, with emphasis on chamomile
Bellei et al., 2021	Descriptive study	To evaluate knowledge about herbal medicines	Observed frequent use, but with gaps in knowledge regarding mechanisms of action
Diniz et al., 2022	Systematic review	To analyze plant species in the treatment of anxiety	Demonstrated clinical efficacy of chamomile in reducing anxiety symptoms
Corrêa et al., 2022	Narrative review	To evaluate the use of herbal medicines in pharmaceutical care	Indicated safety and therapeutic potential of chamomile as an adjuvant
Felizardo et al., 2024	Qualitative study	To analyze anxiolytic properties in popular knowledge	Confirmed traditional use of chamomile with growing scientific support
Menezes & Deuner, 2024	Descriptive study	To investigate herbal medicines in the treatment of GAD	Demonstrated significant reduction of symptoms with chamomile use
Rodrigues et al., 2022	Systematic review	To evaluate phytotherapy in the treatment of anxiety	Demonstrated efficacy of chamomile compared with placebo
Silva, 2021	Narrative review	To analyze phytotherapy in anxiety control	Indicated calming action of chamomile related to the GABA system
Silva et al., 2024	Descriptive study	To evaluate the use of medicinal plants in anxiety	Confirmed benefits of chamomile in reducing mild to moderate anxiety
Teles & Silva, 2024	Descriptive study	To analyze herbal medicines as adjuvants in GAD	Highlighted chamomile as an effective and safe complementary therapy

Xavier et al., 2022	Ethnobotanical study	To investigate the use of chamomile	Demonstrated traditional use for calming and anxiolytic purposes

Source: Research results, developed by the authors (2026).

Analysis of the set of studies revealed the predominance of descriptive designs, clinical trials, and observational investigations, demonstrating the methodological diversity present in the scientific production on the topic and contributing to a broader understanding of the phenomenon investigated.

In general, the objectives of the studies converged toward evaluating the therapeutic potential of medicinal plants, with emphasis on *Matricaria chamomilla* L., in reducing anxiety symptoms. In addition, the studies sought to analyze its safety, efficacy, and applicability as a complementary strategy to conventional treatment, especially in the context of generalized anxiety disorder.

The main findings indicate that *Matricaria chamomilla* L. has a significant anxiolytic effect, especially in individuals with mild to moderate symptoms. Good tolerability and low risk of adverse effects were also observed, factors that favor its use. At the same time, the studies show its broad presence both in the clinical context and in popular use, reinforcing its relevance within integrative and complementary health practices.

Content analysis of the studies enabled the organization of findings into three thematic categories:

Category 1 – Bioactive compounds related to anxiolytic action: The presence of flavonoids such as apigenin, luteolin, and quercetin was identified, in addition to terpenoids such as bisabolol and chamazulene. Among these, apigenin stood out as the main compound associated with the anxiolytic effect, due to its affinity for receptors in the central nervous system.

Category 2 – Pharmacological mechanisms involved in neurotransmitter modulation: The studies demonstrated that the anxiolytic effect is mainly related to modulation of the GABAergic system through interaction with GABA-A receptors. Additionally, possible influences on the serotonergic and dopaminergic systems were observed, expanding understanding of the plant's mechanisms of action.

Category 3 – Efficacy and safety as a complementary therapy in the management of generalized anxiety disorder: Most studies indicated a significant reduction in anxiety symptoms, associated with

improved sleep quality and general well-being. A low incidence of adverse effects was observed, reinforcing the potential of *Matricaria chamomilla* L. as a safe and effective complementary therapy.

This body of evidence supports the relevance of *Matricaria chamomilla* L. as a promising therapeutic alternative, especially when integrated with conventional approaches, contributing to more holistic and patient-centered care.

DISCUSSION OF RESULTS

CATEGORY 1 – MAIN BIOACTIVE COMPOUNDS ASSOCIATED WITH ANXIOLYTIC ACTION

The studies included in this review reveal that *Matricaria chamomilla* L. has a phytochemical composition rich in compounds with therapeutic activity, with flavonoids and terpenoids being primarily responsible for its anxiolytic effects. Apigenin, luteolin, and quercetin stand out among these constituents, being widely documented in the literature for their activity in the central nervous system and their capacity to contribute to the reduction of anxiety symptoms (Abreu et al., 2024; Diniz et al., 2022).

Apigenin occupies a central position among the bioactive compounds with anxiolytic action in *Matricaria chamomilla* L., given its recognized tropism for cerebral benzodiazepine receptors. This interaction favors calming and relaxing effects without inducing pronounced sedation, giving the plant a comparative advantage over classical synthetic anxiolytics (Silva, 2021; Rodrigues et al., 2022).

In parallel with apigenin, luteolin and quercetin play a relevant role in modulating anxiety, acting mainly through antioxidant and neuroprotective properties. By reducing oxidative stress, which is frequently implicated in the development and exacerbation of anxiety disorders, these flavonoids contribute in a complementary way to the plant's therapeutic effect (Diniz et al., 2022; Menezes; Deuner, 2024).

The terpenoids present in *Matricaria chamomilla* L., notably bisabolol and chamazulene, also appear as relevant pharmacological agents, standing out for their anti-inflammatory and relaxing

properties. Their contribution to reducing anxiety symptoms, especially those linked to chronic stress, occurs indirectly but is clinically significant (Felizardo et al., 2024; Corrêa et al., 2022).

The literature indicates that the combined action of these bioactive compounds potentiates the plant's therapeutic effects through a synergistic mechanism. The interaction between flavonoids and terpenoids results in a more effective response in anxiety control, reinforcing the value of *Matricaria chamomilla* L. as a phytotherapeutic option (Teles; Silva, 2024; Silva et al., 2024).

In the field of popular knowledge, the presence of these bioactive constituents supports the empirical recognition of chamomile as a calming agent. Ethnobotanical investigations have shown that traditional communities have used the plant for generations to relieve anxiety symptoms, a finding that corroborates contemporary scientific evidence (Xavier et al., 2022).

Research conducted with students and health professionals indicates, however, that knowledge about the bioactive compounds of *Matricaria chamomilla* L. remains limited, despite the frequency of its use. This finding reinforces the need for greater dissemination of scientific information about its mechanisms of action and therapeutic benefits (Almeida et al., 2025; Mello; Mendonça, 2025).

It is also noteworthy that the concentration of bioactive compounds may vary according to the method of plant preparation, whether infusion, extract, or capsules. This variability directly affects therapeutic efficacy and constitutes a determining factor for the standardization of clinical use (Rodrigues et al., 2022; Diniz et al., 2022).

Another aspect deserving attention concerns the bioavailability of active constituents, especially apigenin, which may be influenced by the route of administration adopted. Studies indicate that standardized formulations have the potential to improve absorption and enhance the plant's anxiolytic effects (Menezes; Deuner, 2024; Teles; Silva, 2024).

In summary, the findings show that the bioactive compounds of *Matricaria chamomilla* L., particularly flavonoids and terpenoids, play a predominant role in its anxiolytic action. Acting in an integrated manner, these constituents promote calming, antioxidant, and neuroprotective effects,

consolidating the relevance of the plant as a therapeutic alternative in anxiety control (Abreu et al., 2024; Corrêa et al., 2022; Silva et al., 2024).

In addition to the compounds already highlighted, recent studies have shown that the interaction of flavonoids with specific intracellular pathways contributes to the regulation of the stress response, including modulation of the hypothalamic-pituitary-adrenal (HPA) axis. This regulation is directly associated with reduced cortisol release, a hormone widely related to anxiety manifestations. In this context, apigenin and quercetin demonstrate potential to attenuate exacerbated neuroendocrine responses, reinforcing the role of *Matricaria chamomilla* L. in maintaining emotional homeostasis (Menezes; Deuner, 2024; Silva et al., 2024).

Additionally, evidence indicates that the bioactive compounds of *Matricaria chamomilla* L. may act on neuroplasticity, favoring the expression of neurotrophic factors such as BDNF (brain-derived neurotrophic factor), which is essential for maintaining neuronal function and adaptation to stress. This mechanism suggests that continuous and guided use of the plant may not only immediately reduce anxiety symptoms, but also contribute to long-term neuroprotective effects, expanding its therapeutic potential within integrative and complementary health practices (Teles; Silva, 2024; Almeida et al., 2025).

CATEGORY 2 – PHARMACOLOGICAL MECHANISMS RELATED TO NEUROTRANSMITTER MODULATION

The studies analyzed demonstrate that the anxiolytic action of *Matricaria chamomilla* L. is based on the modulation of neurotransmitters in the central nervous system, particularly those linked to mood regulation and the stress response. Gamma-aminobutyric acid (GABA), the main inhibitory neurotransmitter of the CNS, plays a prominent role in this mechanism: its activity, frequently reduced in anxiety conditions, represents the main target of action of the plant’s compounds (Silva, 2021; Diniz et al., 2022).

Apigenin, the predominant flavonoid in *Matricaria chamomilla* L., has been widely described as a modulator of GABA-A receptors, exerting an effect analogous to that of benzodiazepines. Through this interaction, inhibitory activity in the central nervous system increases, with consequent reduction in neuronal excitability and production of an anxiolytic effect (Rodrigues et al., 2022; Menezes; Deuner, 2024).

Unlike benzodiazepines, apigenin is distinguished by its lower sedative potential and reduced risk of dependence, attributes that position it as a safer alternative in the management of mild to moderate anxiety. This characteristic has been systematically identified as one of the main advantages of phytotherapy based on *Matricaria chamomilla* L. (Barbosa et al., 2021; Silva et al., 2024).

Beyond GABAergic modulation, the studies indicate that *Matricaria chamomilla* L. also interferes with regulation of the serotonergic system. Considering that serotonin plays a central role in emotional stability and that its dysfunction contributes to the emergence of anxiety disorders, the indirect action of chamomile compounds on this system favors mood improvement and anxiety attenuation (Abreu et al., 2024; Felizardo et al., 2024).

Another mechanism identified in the literature concerns the possible modulation of the dopaminergic system, which is involved in processes such as motivation, pleasure, and reward. Changes in this system may affect anxiety symptoms, and the action of *Matricaria chamomilla* L. may contribute to the rebalancing of these neurochemical functions (Corrêa et al., 2022; Teles; Silva, 2024).

The antioxidant properties of bioactive compounds also play a relevant role in the context of neurotransmitter modulation. Since oxidative stress may impair neurotransmission, the protective action of chamomile on neurons favors the proper functioning of the GABAergic, serotonergic, and dopaminergic systems (Diniz et al., 2022; Silva et al., 2024).

The studies also highlight that the anti-inflammatory action of *Matricaria chamomilla* L. may exert a positive influence on brain function, since inflammatory processes are known to be associated

with neurotransmitter dysregulation and the worsening of mental disorders (Felizardo et al., 2024; Corrêa et al., 2022).

The synergistic interaction among the different bioactive compounds present in the plant amplifies the observed neurochemical modulation, potentiating the therapeutic action of *Matricaria chamomilla* L. on multiple neurotransmission systems (Teles; Silva, 2024; Menezes; Deuner, 2024).

Clinical trials included in the review associate the modulation of these neurotransmitters with a significant reduction in symptoms such as restlessness, muscle tension, and difficulty concentrating, confirming the plant's efficacy in controlling these clinical manifestations (Rodrigues et al., 2022; Diniz et al., 2022).

In clinical practice, the influence of *Matricaria chamomilla* L. on neurotransmitter systems supports its indication as a complementary therapy, especially in association with conventional treatments, contributing to potentiating therapeutic effects without significantly increasing the risk of adverse effects (Mello; Mendonça, 2025; Corrêa et al., 2022).

However, some studies draw attention to the need for greater standardization in the investigation of these mechanisms, since methodological variations and divergences regarding methods for evaluating neurochemical effects still persist (Abreu et al., 2024; Silva et al., 2024).

It should also be emphasized that the form of administration of the plant may directly influence neurotransmitter modulation. Different preparations interfere with the bioavailability of active compounds, conditioning the magnitude of the anxiolytic effects observed (Menezes; Deuner, 2024; Rodrigues et al., 2022).

In summary, the available data demonstrate that *Matricaria chamomilla* L. acts in a multifactorial manner on neurotransmission systems, with a predominance of interaction with the GABAergic system and complementary influence on the serotonergic and dopaminergic systems. These mechanisms support its efficacy in anxiety control and consolidate its profile as a safe and effective therapeutic alternative (Silva, 2021; Diniz et al., 2022; Teles; Silva, 2024).

Additionally, recent evidence suggests that *Matricaria chamomilla* L. may influence the activity of enzymes involved in neurotransmission regulation, such as monoamine oxidase (MAO), responsible for the degradation of neurotransmitters such as serotonin and dopamine. Moderate inhibition of this enzyme by the plant's bioactive compounds may contribute to increased synaptic availability of these monoamines, favoring mood stability and reduction of anxiety symptoms (Abreu et al., 2024; Teles; Silva, 2024).

Another relevant aspect concerns the modulation of neuronal ion channels, especially calcium-dependent channels, which play a fundamental role in neurotransmitter release. Studies indicate that flavonoids such as apigenin may interfere with the dynamics of these channels, promoting reduced neuronal excitability and contributing to the observed calming effect. This mechanism reinforces the complexity of the pharmacological action of *Matricaria chamomilla* L., which is not limited to a single system but acts in an integrated manner on multiple neurochemical targets (Rodrigues et al., 2022; Silva et al., 2024).

Finally, it is noteworthy that the neurotransmitter modulation promoted by *Matricaria chamomilla* L. may also be associated with the regulation of synaptic plasticity, an essential process for the nervous system's adaptation to stressful stimuli. The ability of the plant's compounds to favor the balance between neuronal excitation and inhibition contributes to more adaptive responses to stress, reducing vulnerability to anxiety conditions. These findings broaden understanding of the plant's mechanisms of action and reinforce its potential as a complementary therapeutic agent in the management of anxiety disorders (Menezes; Deuner, 2024; Mello; Mendonça, 2025).

CATEGORY 3 – EFFICACY AND SAFETY AS A COMPLEMENTARY THERAPY IN THE MANAGEMENT OF GAD

The studies gathered in this review show that *Matricaria chamomilla* L. demonstrates significant efficacy as a complementary therapy in the management of generalized anxiety disorder, especially in

cases of mild to moderate intensity. The findings consistently indicate reductions in symptoms such as restlessness, tension, and excessive worry (Rodrigues et al., 2022; Menezes; Deuner, 2024).

Clinical trials and reviews included in this analysis reported decreased scores on validated anxiety assessment instruments when chamomile was compared with placebo or absence of intervention, reinforcing the plant's therapeutic potential (Diniz _et al., _2022; Rodrigues et al., 2022).

In addition to improvement in anxiety symptoms themselves, the studies documented gains in associated parameters, such as sleep quality, reduced irritability, and increased sense of well-being—relevant aspects in the comprehensive management of GAD (Silva et al., 2024; Felizardo et al., 2024).

The adoption of *Matricaria chamomilla* L. as a complementary therapy has proven to be a promising strategy, especially when integrated with conventional pharmacological treatment. This combination may broaden therapeutic effects and favor the reduction of doses of synthetic anxiolytics (Corrêa et al., 2022; Mello; Mendonça, 2025).

Studies dedicated to evaluating benzodiazepines have shown that, despite their efficacy, these medications are associated with significant adverse effects, such as excessive sedation and dependence, which reinforces the relevance of therapeutic alternatives with a better safety profile, such as phytotherapy (Barbosa et al., 2021).

In this context, *Matricaria chamomilla* L. stands out for its favorable tolerability profile. The vast majority of studies analyzed reported a reduced incidence of adverse effects, generally mild and transient in nature, such as mild gastrointestinal discomfort or infrequent allergic reactions (Diniz et al., 2022; Silva, 2021).

The good tolerability of chamomile favors its broad acceptance among patients and contributes to treatment adherence, an especially relevant aspect in the context of chronic conditions such as GAD, which require continuous follow-up (Almeida et al., 2025; Bellei et al., 2021).

The studies also demonstrated that chamomile is significantly integrated into self-care practices and traditional medicine, being widely recognized for its calming properties in popular use. This cultural

rootedness reinforces its relevance as a complementary therapeutic resource (Xavier et al., 2022; Felizardo et al., 2024).

From the perspective of health professionals, herbal medicines are recognized as viable options in the treatment of anxiety, particularly in less severe cases, with chamomile frequently cited among the alternatives of greatest efficacy and safety (Mello; Mendonça, 2025).

Another noteworthy element refers to the accessibility of *Matricaria chamomilla* L.: easily found and low in cost, the plant constitutes a viable alternative for different socioeconomic contexts (Silva et al., 2024; Corrêa et al., 2022).

Despite the favorable results, some studies emphasize that the efficacy of chamomile may vary according to method of use, dosage, and duration of treatment, underscoring the need for standardization of therapeutic protocols (Rodrigues et al., 2022; Menezes; Deuner, 2024).

The absence of strict regulation in certain herbal formulations may also compromise the quality and concentration of active principles, interfering with observed clinical outcomes (Abreu et al., 2024; Teles; Silva, 2024).

Methodological limitations, such as small samples and short follow-up periods, were identified in some studies, a circumstance that restricts the generalization of findings and reinforces the need for more robust investigations (Diniz et al., 2022; Silva et al., 2024).

Even considering these limitations, the results consistently indicate that *Matricaria chamomilla* L. can be safely adopted as a complementary therapy in the management of GAD, with benefits for symptom reduction and improvement of quality of life among affected individuals (Rodrigues et al., 2022; Corrêa et al., 2022).

In summary, analysis of the studies demonstrates that *Matricaria chamomilla* L. possesses attributes favorable to its inclusion in integrative and complementary health practices, standing out for its clinical efficacy, safety, accessibility, and good acceptance among patients. However, the need for greater

methodological rigor and standardization in future studies is reinforced in order to consolidate its use based on scientific evidence (Menezes; Deuner, 2024; Teles; Silva, 2024).

Additionally, recent investigations have explored the impact of prolonged use of *Matricaria chamomilla* L. in the management of generalized anxiety disorder, indicating that its continuous use may contribute to maintaining anxiolytic effects over time, without significant evidence of pharmacological tolerance. This aspect differentiates the plant from several synthetic anxiolytics, whose prolonged use may require dose adjustments, reinforcing the potential of chamomile as a safe strategy for medium- and long-term therapeutic follow-up (Menezes; Deuner, 2024; Silva et al., 2024).

Another relevant point concerns the possibility of individualizing the use of *Matricaria chamomilla* L. in the clinical context, considering characteristics such as age, symptom intensity, and presence of comorbidities. Studies suggest that integrating phytotherapy into personalized therapeutic plans may optimize clinical outcomes and promote more comprehensive care, especially when associated with non-pharmacological interventions such as relaxation practices and health education. This approach strengthens the inclusion of chamomile in integrative and complementary practices, aligning with the principles of patient-centered care (Almeida et al., 2025; Mello; Mendonça, 2025).

FINAL CONSIDERATIONS

The systematic literature review conducted in the present study, aimed at analyzing scientific evidence regarding the clinical efficacy of *Matricaria chamomilla* L. in the management of GAD, made it possible to identify consistent findings that support the therapeutic potential of this medicinal plant in the field of mental health.

Based on the studies analyzed, it was found that *Matricaria chamomilla* L. exerts a significant anxiolytic effect, especially in individuals with mild to moderate manifestations, promoting reduced anxiety levels, improved sleep quality, decreased irritability, and increased general well-being. These

results were consistent across different methodological designs, including clinical trials, observational studies, and literature reviews, which reinforces the robustness and reliability of the evidence gathered.

With regard to mechanisms of action, it was shown that anxiolytic effects are directly related to the presence of bioactive compounds, especially flavonoids such as apigenin, which act in the modulation of neurotransmitters in the central nervous system, with emphasis on the GABAergic system. This interaction contributes to the reduction of neuronal excitability, promoting a calming effect comparable to that of conventional anxiolytics, but with a lower risk of adverse events and dependence.

The safety profile of *Matricaria chamomilla* L. stands out as one of the main attributes supporting its therapeutic use, being characterized by a low incidence of adverse effects and high tolerability. These factors, associated with broad acceptance in popular use and ease of access, expand its applicability in the context of integrative and complementary health practices, favoring treatment adherence.

However, the critical analysis of the literature revealed important limitations, such as heterogeneity of intervention protocols, variations in dosages, preparation forms, and treatment duration, as well as methodological weaknesses in some studies, including small samples and limited follow-up periods. These aspects hinder the standardization of findings and indicate the need for greater scientific rigor in future investigations.

Furthermore, the importance of integrating *Matricaria chamomilla* L. into multidimensional therapeutic approaches is emphasized, considering not only phytotherapeutic use, but also psychosocial interventions and strategies for promoting mental health. This perspective contributes to more comprehensive and patient-centered care, aligned with the principles of contemporary health care.

It is therefore concluded that *Matricaria chamomilla* L. presents relevant therapeutic potential in the management of GAD and may be used as a complementary strategy to conventional treatment. However, new clinical trials with rigorous and standardized methodologies are recommended in order to consolidate evidence regarding its efficacy and safety, supporting its qualified incorporation into evidence-based clinical practice.

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