

Herbal and Ayurvedic Therapies for Mental Health: A Scoping Review with Implications for Nepal

Prajwol Luitel , Bishal K.C., Ranjan Sapkota

ABSTRACT

Introduction Nepal faces a substantial and growing mental health burden, with an estimated 3.9 million people affected in 2019. Traditional herbal and Ayurvedic therapies are widely used for mental health conditions, yet their evidence base remains unclear. This review aimed to characterise the available evidence on plant-based and Ayurvedic interventions for mental health in South Asia, with direct implications for clinical practice, research, and policy in Nepal.

Methods A scoping review was conducted following the Arksey-O'Malley framework and reported according to PRISMA-ScR guidelines. PubMed/MEDLINE, Embase, and Scopus were searched from inception to January 15, 2026. Eligible studies included primary research of any design, randomized controlled trials (RCTs), clinical studies, observational and ethnobotanical research, and preclinical experiments, investigating plant-based or Ayurvedic pharmacotherapies for mental health conditions. No geographic filters were applied at the database search stage; eligibility was restricted to South and Southeast Asia during screening using the Population-Concept-Context framework.

Results Twenty two studies met inclusion criteria, comprising RCTs, clinical studies, and preclinical experiments. Studies were conducted in India. The most frequently studied interventions were *Withania somnifera*, *Nardostachys jatamansi*, *Valeriana wallichii*, and polyherbal formulations including Brahmi Vati and Saraswatarishta. Randomized trials of *Withania somnifera* reported improvements in stress, anxiety, sleep quality, and depressive symptoms. *Nardostachys jatamansi* demonstrated benefit across depression, insomnia, and cancer-related psychological distress in clinical trials. Most remaining herbs, including *Convolvulus pluricaulis*, *Tinospora cordifolia*, and *Acorus calamus*, were supported only by preclinical evidence. Safety signals were identified for specific herbs, including the genotoxic potential of β -asarone in *Acorus calamus* and herb-drug interaction risks relevant to concurrent psychotropic use.

Conclusions Herbal and Ayurvedic interventions for mental health are supported by substantial traditional use and emerging clinical evidence, but the evidence base is heterogeneous, geographically concentrated in India, and methodologically limited. *Withania somnifera* and *Nardostachys jatamansi* show the most consistent clinical signals and warrant prioritisation in future trials. Well-designed trials, alongside strengthened pharmacovigilance and quality regulation of herbal products, are needed to translate traditional knowledge into evidence-based care.

Keywords: Mental health, traditional medicine, ayurvedic herb, Nepal

INTRODUCTION

Mental health conditions are a leading cause of disability worldwide. In 2019, an estimated 3.9 million Nepalese were affected by mental health conditions, with depression and anxiety being the most prevalent [1]. Nepal's decade-long conflict and natural disasters have further impacted mental health, yet professional services remain limited [1,2]. A prior scoping review reported the development of mental health systems and services in Nepal, as well as international efforts to integrate attention to culture in global mental health [3]. A prior review reported that traditional healers in low-and middle-income countries (LMICs) were perceived to effect the most change among those who suffered from less severe mental illness, expected positive change, and believed in the inherent meaning of their treatment [4,5].

Over the past decade, the use of herbal therapies in managing mental health conditions has gained recognition both in developing and developed countries [6]. In Nepal, traditional medicine is widely used: of Nepal's 6500 plant species, about 2000 are used medicinally [7], and many Nepalese rely on Ayurvedic and herbal remedies for stress, insomnia, and other complaints. Despite this, the scientific evidence for herbal/Ayurvedic treatments of mental health

has not been reviewed systematically. This is a timely opportunity to review the existing body of literature from Nepal and South Asia.

However, research describing traditional medicines is challenging to synthesize. Studies examining the link between traditional medicines and mental health remain limited, largely due to methodological difficulties related to designing, implementing, and evaluating studies involving traditional healing systems [8]. Therefore, to comprehensively map the available evidence, including qualitative studies that are typically excluded from conventional reviews, a scoping review approach was chosen. Guided by the population-concept-context (PCC) framework, this scoping review addresses: "What plant-based (herbal/Ayurvedic) interventions for mental health have been studied in South and Southeast Asia, and what is the nature of that evidence?" It summarizes the available studies on commonly used ayurvedic and herbal compounds for mental health conditions, its traditional uses, potential mechanisms of action, and current evidence. Readers exploring traditional healers and mental health within Nepal's complex sociocultural context may find it useful to interpret this review alongside the recent work

by Chase and colleagues [3], which examined culture and mental health in Nepal.

METHODS

This scoping review was conducted following the Arksey-O'Malley framework as updated by Levac et al. and the Joanna Briggs Institute and is reported according to PRISMA-ScR guidelines [9]. Since prior study [10] have already done broad review on herbal medicine in psychiatric disorders, we focused on the herbs and Ayurvedic pharmacotherapies that are important in the context of Nepal and South and Southeast Asia. The review protocol was not prospectively registered; however, the methodology was defined *a priori* in accordance with PRISMA-ScR guidance.

Eligibility Criteria

This scoping review followed the Population-Concept-Context (PCC) framework. Studies were included if they involved mental health conditions or symptoms, defined broadly to include both subclinical and clinical conditions such as major depressive disorder (MDD), generalized anxiety disorder (GAD), psychological distress, sleep disorders, and stress-related conditions. Eligible interventions comprised herbal, plant-based, or Ayurvedic therapies, including single herbs, polyherbal formulations, and classical Ayurvedic preparations used for mental health indications. Only studies conducted in South and Southeast Asia were included. Primary research across a range of study designs, including randomized controlled trials, observational studies, ethnobotanical surveys, and preclinical studies (animal and *in vitro*) investigating mechanisms relevant to mental health outcomes, was considered. Review articles were excluded to avoid duplication of evidence, as the objective of this scoping review was to map primary research. Conference abstracts were excluded due to insufficient methodological detail for data extraction. Studies focusing solely on non-plant-based traditional practices (e.g., ritual or spiritual interventions) were also excluded.

Database

We searched PubMed/MEDLINE, Embase, and Scopus for peer-reviewed publications. Reference lists of included studies and expert consultation were used to identify additional relevant records. The search covered inception until January 15, 2026. The search strategy combined controlled vocabulary and free-text terms related to herbal/Ayurvedic interventions and mental health outcomes. No geographic filters were applied at the database search stage to maximize sensitivity. Instead, geographic eligibility (South and Southeast Asia, including Nepal) was applied during the screening phase based on study setting. This approach ensured comprehensive retrieval of relevant literature while maintaining contextual relevance during study selection. The full electronic search strategies for PubMed/MEDLINE, Embase, and Scopus, including all keywords, Boolean operators, and limits used, are provided in Supplementary File 1.

Selection of Sources: Search results were exported and de-duplicated. Two independent reviewers (P.L., B.K.) screened titles/abstracts for relevance, applying the inclusion criteria. Duplicate records were removed using Covidence

and verified manually prior to screening. Conflicts were resolved by discussion. Full texts of potentially eligible records were then obtained and assessed independently by the same reviewers. We recorded reasons for exclusion at the full-text stage. The process and numbers at each stage were reported with a PRISMA-ScR flowchart and Supplementary file 2 (Figure 1).

Data Charting & Items

A structured data-charting form was developed in Google Sheets to systematically extract study characteristics and outcomes. The form was pilot tested on a subset of studies (n=11) to ensure consistency, completeness, and clarity of variables. Based on this pilot, minor refinements were made to variable definitions and extraction procedures before full data charting. Two reviewers independently extracted data, including: author/year, study design, setting (urban/rural, hospital/field), population (sample size, demographics), herbal/Ayurvedic intervention (herb name, preparation, dose), comparator (if any), mental health outcome(s) measured, key findings (effects, statistical significance), and funding/conflicts. These data items covered all relevant variables and aligned with PRISMA-ScR's recommendation to list and define variables [9].

Critical Appraisal

Consistent with scoping review methodology, formal risk-of-bias assessment was not performed. However, a descriptive summary of study designs was included to provide an overview of the evidence base.

Synthesis of Results

Quantitative results (e.g. outcome measures) were tabulated; qualitative themes (if any) were narrated. We grouped findings by herbal interventions. We presented counts and report key data on each intervention from included studies. This approach follows PRISMA-ScR guidance to describe methods of summarizing charted data.

RESULTS

Database search yielded 6,728 records, of which 2,628 were screened after duplicate removal. Following title-abstract and full-text screening, 22 studies met inclusion criteria (Figure 1).

The included studies varied substantially in design, population, and interventions. The evidence base comprised randomized controlled trials, clinical studies, and preclinical experiments, with all studies conducted in India. The findings are presented below as a structured mapping of individual herbal and Ayurvedic interventions.

Several herbs and Ayurvedic therapies were investigated for stress, anxiety, depression, and sleep. Ashwagandha was the most frequently studied intervention (RCT showing benefit on anxiety, stress, depression and sleep quality) and mixed for Sarpagandha (some benefit but side effects). Many herbs (e.g. jatamansi, shatavari) have traditional use but scant clinical data. The results (Table 1) provide an overview of the therapies. The results are presented as a descriptive mapping of available evidence, without formal quantitative synthesis or assessment of intervention effectiveness.

Ashwagandha (*Withania somnifera*)

Three RCTs conducted in India evaluated *Withania somnifera* in populations with stress, insomnia, and mild-

to-moderate anxiety or depression [17,25,26]. Across these studies, interventions using standardized root extracts reported improvements in stress, anxiety, sleep quality, and depressive symptoms compared to placebo. The outcomes assessed included validated clinical measures of anxiety, stress, sleep, and, in some studies, cortisol levels. No included studies evaluated Ashwagandha specifically in severe psychiatric conditions such as psychosis or mania. Overall, Ashwagandha was the most frequently studied single-herb intervention in this review, with consistent

in patients with insomnia reported improved sleep quality following administration of a Tagara-based formulation [15]. A clinical study using Tagara or related formulations also demonstrated improvement in sleep parameters [14]. Additionally, a quasi-experimental study among nurses reported reduced stress levels following *Valeriana wallichii* intervention compared to counselling [28]. Overall, the included studies suggest potential benefits of Tagara in improving sleep and reducing stress-related symptoms.

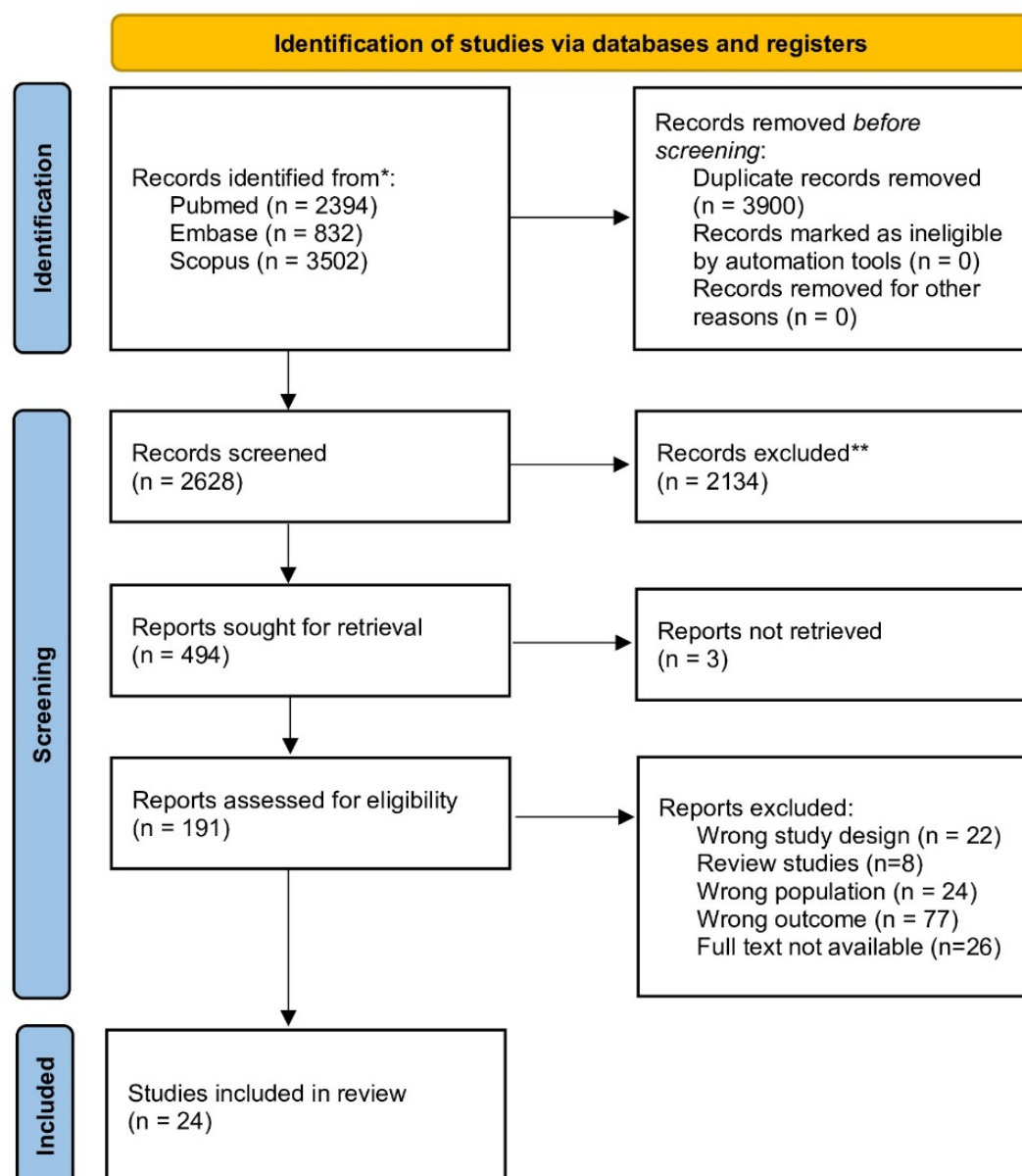


Figure 1. PRISMA-ScR flow diagram of study selection

findings across randomized trials supporting its potential role in stress- and anxiety-related conditions.

Tagara (*Valeriana wallichii*)

Three studies evaluated *Valeriana wallichii* for sleep and stress-related outcomes, including one randomized controlled trial [15], one clinical study [14], and one quasi-experimental study [28]. The randomized trial conducted

Jatamansi (*Nardostachys jatamansi*)

Three studies evaluated *Nardostachys jatamansi* for mental health-related outcomes, including two randomized controlled trials [30,31] and one clinical study [14]. The randomized trials conducted in patients with depression

Table 1: Characteristics of included studies (n = 22)

Author (Year)	Study Design	Population	Intervention	Comparator	Outcomes	Key Findings
Sairam et al. (2002) [11]	Preclinical (animal)	Rats in experimental depression model	Bacopa monnieri extract	Control	Depressive behavior	Demonstrated antidepressant-like activity in rat models
Tripathi et al. (2010) [12]	Preclinical (animal)	Rats in experimental depression model	Acorus calamus	Stress-model control	Depressive and exploratory behavior	Prevented stress-induced behavioral deficits
Kosaraju et al. (2014) [13]	Preclinical (animal)	6-OHDA rat model	Tinospora cordifolia extract	Disease control	Neuroprotection, behavioral deficits	Suggested neuroprotective effects
Toolika et al. (2015) [14]	Clinical study	Patients with insomnia	Tagara / Jatamansi	Comparator	Sleep	Improved sleep parameters
Sharma et al. (2017) [15]	Randomized controlled trial	Patients with insomnia	Tagaradi yoga (Valeriana wallichii)	Not reported	Sleep outcomes	Improved sleep quality
Gupta et al. (2019) [16]	Preclinical (animal)	Rats under chronic stress	Convolvulus pluricaulis extract	Stress-model control	Depressive behavior, neuro-inflammation	Showed antidepressant-like effects
Langade et al. (2019) [17]	Randomized controlled trial	Adults with insomnia	Withania somnifera extract	Placebo	Sleep, anxiety	Improved sleep and anxiety outcomes
Khot et al. (2022) [18]	Randomized controlled trial	Patients with GAD	Brahmi Vati	Comparator	Anxiety	Reduced anxiety symptoms
Pahwa et al. (2022) [19]	Preclinical (animal)	Mice	Asparagus racemosus	Control	Seizure, depressive behavior	Reduced seizure activity and depressive features
Bhandari et al. (2022) [20]	Preclinical (animal)	Female rats	Tinospora cordifolia supplementation	Control	Anxiety, cognition	Improved anxiety-like behavior and cognition
Khan et al. (2023) [21]	Preclinical (animal)	Male mice	Convolvulus pluricaulis extract	Control	Anxiety-like behavior, CNS activity	Demonstrated anxiolytic and CNS depressant effects
Rai et al. (2023) [22]	Preclinical (animal)	Socially isolated rats (n=24)	Acorus calamus extract	Stress control	Depressive behavior, oxidative stress	Improved behavioral and antioxidant outcomes
Dhakriya et al. (2024) [23]	Clinical study	Patients with schizophrenia	Rauwolfia serpentina	Not reported	Psychiatric symptoms	Reported symptom improvement
Gonugade et al. (2024) [24]	Randomized controlled trial	Patients with GAD	Brahmi Vati + Saraswatarishta	Comparator	Anxiety	Improved anxiety scores
Majeed et al. (2024) [25]	Randomized controlled trial	Adults with depression/anxiety	Ashwagandha extract + piperine	Placebo	Anxiety, depression	Reported symptom improvement
Boccardi et al. (2024) [26]	Randomized controlled trial	Chronically stressed adults	Withania somnifera extract	Placebo	Stress, cortisol	Improved stress outcomes
Ademola et al. (2025) [27]	Randomized controlled trial	Perimenopausal women	Asparagus racemosus	Placebo	Stress, menopausal symptoms	Reduced stress and improved symptoms
Mishra et al. (2025) [28]	Quasi-experimental	Nurses	Valeriana wallichii	Counselling	Stress	Reduced stress levels
Manasa et al. (2025) [29]	Randomized controlled trial	Patients with insomnia	Saraswatarishta	Comparator	Sleep	Improved sleep outcomes
Sardeshmukh et al. (2025) [30]	Randomized controlled trial	Cancer patients	Jatamansi therapy	Control	Psychological distress	Improved quality of life
Jismi et al. (2025) [31]	Randomized controlled trial	Patients with depression	Nardostachys jatamansi	Escitalopram /placebo	Depression	Improved depressive symptoms
Mitra et al. (2025/2026) [32]	Preclinical (Drosophila)	Drosophila melanogaster model	Convolvulus pluricaulis	Stress control	Depression-like behavior, oxidative stress	Demonstrated antidepressant and antioxidant effects

and cancer-related psychological distress reported improvements in depressive symptoms and overall quality of life. A clinical study in patients with insomnia using Jatamansi-containing formulations also demonstrated improvement in sleep parameters. Across studies, reported outcomes included depression, sleep quality, and psychological distress, with consistent improvements observed following intervention.

Shatavari (*Asparagus racemosus*)

Two studies evaluated *Asparagus racemosus* for mental health-related outcomes, including one RCT [27] and one preclinical study [19]. The randomized trial conducted

anxiety disorder, including one study assessing it alone [18] and another in combination with Saraswatarishta [24]. Both trials reported improvements in anxiety outcomes following intervention. One study also reported improvement in sleep-related outcomes. Overall, the evidence suggests that Brahmi Vati may have beneficial effects in anxiety-related conditions, although findings are limited to a small number of clinical trials.

Saraswatarishta

Two randomized controlled trials evaluated Saraswatarishta for mental health-related outcomes. One trial in patients

Table 2. Summary of herbal and Ayurvedic interventions for mental health

Herb / Formulation	Scientific Name	No. of Studies [Ref]	Main Outcomes	Evidence Summary	Level of Evidence
Ashwagandha	<i>Withania somnifera</i>	3 [17, 25, 26]	Stress, anxiety, sleep, depression	Randomized trials reported improvements in stress, anxiety, sleep, and depressive symptoms	Moderate (clinical)
Tagara	<i>Valeriana wallichii</i>	3 [14, 15, 28]	Sleep, stress	Clinical and quasi-experimental studies reported improved sleep quality and reduced stress	Moderate (clinical)
Jatamansi	<i>Nardostachys jatamansi</i>	3 [14, 30, 31]	Depression, sleep, psychological distress	Clinical studies reported improvements in depressive symptoms, sleep, and distress outcomes	Moderate (clinical)
Shatavari	<i>Asparagus racemosus</i>	2 [19, 27]	Stress, menopausal symptoms, neurobehavioral outcomes	Evidence suggests stress reduction in clinical settings with supportive preclinical findings	Mixed (clinical + preclinical)
Brahmi Vati	<i>Polyherbal formulation</i>	2 [18, 24]	Anxiety	Randomized trials demonstrated reduction in anxiety symptoms in GAD	Moderate (clinical)
Saraswatarishta	<i>Polyherbal formulation</i>	2 [24, 29]	Anxiety, sleep	Clinical trials showed improvements in anxiety and sleep outcomes	Moderate (clinical)
Brahmi Vati + Saraswatarishta	<i>Polyherbal combination</i>	1 [24]	Anxiety	Combination therapy showed improvement in anxiety outcomes	Limited (clinical)
Sarpagandha	<i>Rauwolfia serpentina</i>	1 [23]	Psychiatric symptoms	Single clinical study reported improvement in psychiatric symptoms	Limited (clinical)
Shankhapushpi	<i>Convolvulus pluricaulis</i>	3 [16, 21, 32]	Anxiety-like behavior, depression, neuro-inflammation	Preclinical studies demonstrated antidepressant-like and anxiolytic effects	Limited (preclinical)
Guduchi	<i>Tinospora cordifolia</i>	2 [13, 20]	Anxiety, cognition, neuroprotection	Preclinical studies suggested anxiolytic and neuroprotective effects	Limited (preclinical)
Vacha	<i>Acorus calamus</i>	2 [12, 22]	Depressive behavior, CNS activity	Animal studies demonstrated antidepressant-like and CNS-modulating effects	Limited (preclinical)
Brahmi	<i>Bacopa monnieri</i>	1 [11]	Depressive behavior	Animal study demonstrated antidepressant-like effects	Limited (preclinical)

in peri-/menopausal women reported improvement in perceived stress and menopausal symptoms following administration of Shatavari root extract [27]. A preclinical study in animal models also demonstrated effects on seizure-related and depressive behaviors [19]. Overall, the available evidence suggests potential benefits of Shatavari in stress-related conditions, although findings are derived from limited clinical data with supportive preclinical evidence.

Brahmi Vati

Two RCTs evaluated Brahmi Vati in patients with generalized

with generalized anxiety disorder reported improvement in anxiety outcomes when Saraswatarishta was used in combination with another Ayurvedic formulation [24]. Another randomized trial in patients with insomnia reported improved sleep outcomes following intervention [29]. Overall, the included studies suggest potential benefits of Saraswatarishta in anxiety- and sleep-related conditions, although evidence is limited to a small number of clinical trials.

Sarpagandha (*Rauwolfia serpentina*)

One clinical study evaluated *Rauwolfia serpentina* in patients

with schizophrenia [23]. The study reported improvement in psychiatric symptoms following intervention. No trials evaluating *Rauwolfia serpentina* for mental health outcomes were identified. Overall, the available evidence is limited and based on a single clinical study.

Shankhapushpi (*Convolvulus pluricaulis*)

Three preclinical studies evaluated *Convolvulus pluricaulis* for mental health-related outcomes, including animal and *Drosophila* models [16,21,32]. These studies reported antidepressant-like and anxiolytic effects, along with improvements in stress-related behavioral outcomes and oxidative stress markers. No clinical studies evaluating Shankhapushpi for primary mental health conditions were identified in this review. Overall, the available evidence is limited to preclinical findings.

Guduchi (*Tinospora cordifolia*)

Two preclinical studies evaluated *Tinospora cordifolia* for mental health-related outcomes in animal models [13,20]. These studies reported improvements in anxiety-like behavior and cognitive performance, along with neuroprotective effects in experimental conditions. No clinical studies evaluating Guduchi in psychiatric populations were identified in this review. Overall, the available evidence is limited to preclinical findings and remains exploratory.

Vacha (*Acorus calamus*)

Two preclinical studies evaluated *Acorus calamus* for mental health-related outcomes in animal models [12,22]. These studies reported antidepressant-like effects and improvement in stress-related behavioral outcomes, along with broader central nervous system activity. No clinical studies evaluating *Acorus calamus* for psychiatric conditions were identified in this review. Overall, the available evidence is limited to preclinical findings.

Brahmi (*Bacopa monnieri*)

One preclinical study evaluated *Bacopa monnieri* for mental health-related outcomes in animal models [11]. The study reported antidepressant-like effects in experimental models of depression. No clinical studies evaluating *Bacopa monnieri* monotherapy for psychiatric conditions were identified in this review. Overall, the available evidence is limited to preclinical findings.

DISCUSSION

This scoping review mapped the evidence on herbal and Ayurvedic interventions for mental health conditions in South Asia. The findings suggest that they have potential value as adjunctive therapies, particularly for stress-related conditions, mild anxiety, sleep disturbances, and psychological distress. Nepal has a significant mental health burden with an estimated 3.9 million affected individuals in 2019, hence understanding evidence base for these therapies is a public health necessity.

Gap Between Traditional Use and Clinical Evidence

A central finding of this review is the imbalance between widespread ethnomedical use and limited clinical studies. While *Withania somnifera*, *Valeriana wallichii*, *Nardostachys jatamansi*, and polyherbal formulations like Brahmi Vati and Saraswatarishta have been supported by RCTs, evidence for *Acorus calamus*, *Tinospora cordifolia*, and *Convolvulus pluricaulis*, are restricted to preclinical studies. This gap

is striking given Nepal's position as a major biodiversity hotspot. Of approximately 6,500 plant species found in Nepal, around 2,000 are used medicinally [7]. Many of the most frequently studied herbs – including Jatamansi, Tagara, and Shankhapushpi – grow natively in or are sourced from the Himalayan region. Nepal is therefore simultaneously one of the world's primary sources of these medicinal plants and one of the least active contributors to their scientific evaluation.

Pharmacological Mechanisms and Their Clinical Relevance

The clinical findings of this review are consistent with the pharmacological mechanisms proposed for these herbs in preclinical literature and can be broadly categorized into functional groups based on their therapeutic roles. Adaptogenic herbs, including *Withania somnifera* and *Asparagus racemosus*, evaluated in stress-related conditions and demonstrated potential benefits in modulating psychological and physiological stress responses [17,25,26]. *Withania somnifera*, the most frequently studied intervention, has demonstrated modulation of the hypothalamic-pituitary-adrenal (HPA) axis, reduction of serum cortisol, and GABAergic activity, mechanisms that align with the improvements in stress, anxiety, and sleep quality observed across RCTs [17,25,26]. *Nardostachys jatamansi* has been shown to exert serotonergic and GABAergic effects in preclinical models, supporting its observed benefits in major depressive disorder and insomnia [31]. *Valeriana wallichii* is thought to act through GABA-A receptor modulation, consistent with its sedative and anxiolytic properties observed in clinical studies [14,15,28]. Cognitive-enhancing and neuroprotective herbs, such as *Bacopa monnieri* and *Convolvulus pluricaulis*, were primarily supported by preclinical evidence [16,29,32]. The polyherbal formulations, Brahmi Vati and Saraswatarishta, present a more complex pharmacological picture, as their multi-ingredient composition likely acts through synergistic effects across neurochemical, endocrine, and anti-inflammatory pathways. This multi-target action is consistent with Ayurvedic therapeutic philosophy and may offer advantages in conditions where both psychological and physiological dysregulation are present [18,24]. The attribution of effects to specific active constituents remains difficult, limiting reproducibility and mechanistic understanding.

Strength and Consistency of the Evidence Base

The evidence base identified in this review was heterogeneous in both quality and scope. Clinical evidence was concentrated in a small number of herbs and formulations [17,25,26], while several traditionally used interventions lacked human studies entirely. Among the RCTs, sample sizes were generally small (typically under 100 participants), study durations were short (commonly four to twelve weeks), and outcome measures were inconsistent across studies, limiting cross-study comparison. No included studies evaluated long-term outcomes, safety over sustained use, or comparative effectiveness against established pharmacotherapies in well-characterized psychiatric populations.

Despite these limitations, the consistency of positive findings for *Withania somnifera* across three independent RCTs using different populations and outcome measures is noteworthy. The convergent evidence for stress reduction, improved sleep quality, and anxiolytic effects suggests clinical signal.

Similarly, the three studies evaluating *Nardostachys jatamansi* across depression, insomnia, and cancer-related distress, while methodologically varied, point to a consistent therapeutic role in mood and sleep regulation that warrants formal investigation.

Safety, Standardization, and Pharmacovigilance

Safety considerations are critical in the Nepali context, where herbal products are widely available without prescription, quality regulation is limited and use with biomedical treatments is common. Most interventions reviewed are traditionally considered safe, with mild and infrequent adverse effects such as gastrointestinal discomfort or transient drowsiness at higher doses. However, specific safety concerns identified in this review warrant clinical attention.

For example, *Acorus calamus* contains β -asarone, a compound with documented genotoxic potential toxicological risks in animal studies. Polyherbal and herb-mineral formulations may carry risks of heavy metal composition and inter-batch variability. Reports of adverse effects related to improperly processed *Tinospora cordifolia* further emphasize the need for quality assurance, standardization, and pharmacovigilance in clinical use. The potential for herb-drug interactions is clinically relevant: for example, the serotonergic activity of *Nardostachys jatamansi* carries theoretical interaction risk with serotonergic antidepressants such as escitalopram, the comparator used in the trial by Jismi et al. [31]. Nepalese clinicians should be alert to concurrent herbal use when prescribing psychotropic medications.

Nepal currently lacks a pharmacovigilance infrastructure for herbal and Ayurvedic products. Establishing standardized preparation protocols, mandatory adverse event reporting for traditional medicine practitioners, and regulatory oversight of herbal quality would reduce patient risk and enable the broader integration of evidence-based therapies into care pathways.

Implications for Nepal: Clinicians, Researchers, and Policymakers

Despite the widespread integration of Ayurvedic and herbal therapies into mental health care in Nepal, the evidence base remains entirely generated outside the country, with most studies conducted in urban hospital settings in India. This reflects real differences in cultural context, available plant preparations, practitioner training, healthcare system structures, and patient populations that limit the direct applicability of Indian findings to Nepal. The findings of this review must therefore be interpreted as indicative rather than directly transferable.

For Nepalese clinicians, the most actionable implication is the need for informed awareness. The available evidence is sufficient to justify neither endorsement nor dismissal of these therapies. Ashwagandha, Jatamansi, and Tagara have clinical trial support for stress, mild anxiety, depression, and insomnia, conditions that constitute most mental health presentations at the primary care level in Nepal. Clinicians should ask patients about herbal use, provide informed guidance on safety and potential interactions, and approach integration with patients as a collaborative, evidence-informed conversation rather than a binary choice between biomedical and traditional care.

Nepal's unique combination of biodiversity, established traditional knowledge systems, a dual-burden mental health context, and growing academic health infrastructure makes it an ideal site for pragmatic clinical trials of locally relevant interventions. Priority should be given to herbs with established preclinical evidence and traditional use in Nepal, particularly *Nardostachys jatamansi*, *Valeriana wallichii*, and polyherbal formulations, in well-characterized populations using standardized preparations and validated outcome measures. Nepal's national mental health strategy and its phased implementation of the mental health Gap Action Programme (mhGAP) at district level represent a structural opportunity to incorporate validated herbal adjuncts alongside psychosocial and pharmacological interventions. This integration must be conditional on evidence generation: context-specific trials, not tradition alone, should guide which therapies are formally endorsed.

Limitations

This review has several limitations that should inform the interpretation of its findings. As a scoping review, it did not include formal risk-of-bias assessment or quantitative synthesis, and findings reflect the breadth of available evidence than its quality. The predominance of English-language sources may have introduced language bias; relevant studies published in Nepali, Hindi, or Sanskrit-language grey literature may have been missed. The geographic concentration of included studies in India limits applicability to Nepal, as differences in plant preparation traditions, available species, and healthcare settings may produce meaningfully different outcomes. Publication bias likely inflates the apparent proportion of positive findings, as negative or null herbal trials are rarely published. Finally, the heterogeneity of herbal preparations – differences in extract type, dosage, duration, and formulation even within studies of the same herb – limits the generalizability of conclusions and makes cross-study comparison difficult. Future research should prioritize rigorous randomized trials using standardized formulations, consistent outcome measures, and integration with existing mental health care systems in LMICs.

CONCLUSIONS

Herbal and ayurvedic therapies for mental health conditions have a central role in health-seeking behavior across Nepal and South Asia, yet the clinical evidence supporting their use remains limited relative to the scale of their use. This review found that while certain interventions, *Withania somnifera*, *Nardostachys jatamansi*, and *Valeriana wallichii*, are supported by randomized trial evidence for stress, anxiety, sleep disturbance, and mild depression, most traditionally used herbs remain validated only at the preclinical level.

The overall evidence base is heterogeneous, concentrated in India, and constrained by small sample sizes, short follow-up duration, and inconsistent outcome measures. Nepalese pragmatic trials using standardized preparations, validated outcome measures, and real-world implementation settings are the necessary next step. Alongside research investment, quality regulation and pharmacovigilance infrastructure for herbal products must be strengthened to ensure patient safety.

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Author's Contributions Prajjwol Luitel conceptualized and designed the study, conducted the literature search, performed data extraction, statistical analysis, and drafted the manuscript. Bishal K.C. supervised the study, contributed to methodological design, risk of bias assessment, and critical revision of the manuscript. Ranjan Sapkota contributed to study design, data interpretation, and critical review of the manuscript. All authors reviewed and agreed the final version of the manuscript and were responsible for all aspects of the preparation of this manuscript. Prajjwol Luitel is the corresponding author and guarantor of the study.

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