Impact of Alternative Therapies on Sleep Quality and Quality of Life in Patients with Depressive and Anxiety Disorders- A Comparative Study

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Abstract:

Background: Depressive and anxiety disorders impose a substantial global burden, with significant associated impairments in sleep quality and quality of life. Standard pharmacotherapy achieves full remission in only 30–40% of patients, and residual functional impairments frequently persist. The impact of structured multimodal alternative therapy as an adjunct to pharmacotherapy remains underexplored in Indian psychiatric practice.

Methods: A prospective, comparative interventional study enrolled 100 patients with depressive or anxiety disorder (ICD-10) randomised to Group P (pharmacotherapy only, n=50) or Group A (pharmacotherapy plus structured alternative therapy, n=50). Outcomes HAM-A, HAM-D, Sleep Quality Scale (SQS), and WHOQOL-BREF were assessed at baseline and Week 12.

Results: Both groups were comparable at baseline (all $p>0.05$). By Week 12, Group A demonstrated significantly superior outcomes across all measures (all $p<0.001$): HAM-A reduction −10.20 vs −5.28; HAM-D −8.88 vs −3.72; SQS −23.34 vs −11.18; WHOQOL-BREF gain +14.92 vs +7.56 approximately twice the improvement of pharmacotherapy alone. Therapy frequency was the strongest independent predictor of both sleep and quality of life improvement ($p<0.001$).

Conclusion: Structured multimodal alternative therapy produces significantly superior outcomes in sleep quality and quality of life compared to pharmacotherapy alone. These findings support its formal incorporation as a standard component of treatment for depressive and anxiety disorders.

Keywords: Alternative therapy, depression, anxiety, sleep quality, quality of life, HAM-A, HAM-D, WHOQOL-BREF

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INTRODUCTION

Depressive and anxiety disorders are among the most prevalent mental health conditions globally, collectively affecting over 500 million individuals and contributing substantially to years lived with disability. In India, the National Mental Health Survey 2015–16 reported current prevalence rates of 2.68% for depressive disorders and 2.94% for anxiety disorders, underscoring the scale of the burden in the local context.[1]

Both conditions are characterised by significant impairments in sleep quality and quality of life. Sleep disturbances including insomnia, non-restorative sleep, and disrupted sleep architecture are reported in up to 90% of patients with depression and are a core feature of anxiety disorders, where hyperarousal and autonomic dysregulation perpetuate a cycle of nocturnal dysfunction and daytime impairment. Sleep quality has been shown to correlate inversely with all four domains of the WHOQOL-BREF, making it a critical and measurable treatment target alongside symptom severity.[2,3]

Alternative non-pharmacological therapies refer to structured, evidence-based interventions used alongside standard pharmacotherapy to address domains of illness that medication alone does not adequately resolve. These include progressive

muscle relaxation and diaphragmatic breathing, which attenuate autonomic hyperarousal; yoga and physical exercise, which improve mood, anxiety, and sleep architecture; Mediterranean-pattern dietary modification, which modulates inflammatory and gut-brain pathways implicated in depression; and music and dance/movement therapy, which target psychological and social dimensions of well-being through receptive and embodied approaches. Each modality has demonstrated independent efficacy in randomised trials; however, their combined impact as a structured multimodal programme adjunct to pharmacotherapy has not been evaluated in routine Indian tertiary psychiatric practice.[5,6,7,8]

Standard pharmacotherapy with SSRIs and SNRIs achieves full remission in only 30–40% of patients, and residual impairments in sleep and quality of life frequently persist even after symptomatic improvement. While individual alternative therapy modalities have been studied largely in Western populations, very limited evidence exists for their use as a combined programme in the Indian clinical context, where sociocultural factors significantly influence acceptability and engagement. The present study was therefore undertaken to evaluate, in a prospective comparative design, whether a structured multimodal alternative therapy programme produces superior outcomes in sleep quality and quality of life compared to pharmacotherapy alone over 12 weeks in patients with depressive and anxiety disorders in North India.[1,4]

MATERIALS AND METHODOLOGY

Study Design and Setting

This was a prospective, comparative, single-centre, parallel-group interventional study conducted over 18 months at a tertiary care teaching hospital in Northern India. One hundred patients with clinically diagnosed depressive or anxiety disorder (ICD-10 criteria), aged 18–60 years, attending the Psychiatry Outpatient Department were enrolled; patients with significant psychiatric or medical comorbidities, cognitive impairment, or who declined consent were excluded. Sample size was calculated using Cochran's formula (minimum n=65; 100 enrolled for added robustness).[9]

Patients were allocated by simple alternation into Group P (pharmacotherapy only, n=50) and Group A (pharmacotherapy plus structured alternative therapy, n=50), each subdivided into 25 depressive and 25 anxiety disorder patients. All participants received evidence-based pharmacotherapy SSRIs or SNRIs as first-line, with short-term benzodiazepines for anxiety where indicated. Group A additionally received a structured 12-week multimodal alternative therapy programme comprising: progressive muscle relaxation and diaphragmatic breathing daily; Hatha yoga three times weekly and 30 minutes of brisk walking daily; Mediterranean-pattern dietary modification with nutritional counselling; receptive music listening and dance/movement therapy; and individual and group psychoeducation sessions. Adherence was monitored through structured interviews, self-report diaries, and weekly telephone contact. Outcomes were assessed at baseline (Week 0) and Week 12. The study was conducted in accordance with the Declaration of Helsinki; all participants provided written informed consent.

Anxiety severity was assessed using the Hamilton Anxiety Rating Scale (HAM-A), a 14-item clinician-rated scale (score range 0–56; ≥15 = moderate anxiety).[10,11]

Depression severity was assessed using the Hamilton Depression Rating Scale (HAM-D), a 21-item clinician-rated scale (score range 0–63; ≥17 = moderate depression).[12]

Sleep quality was assessed using the Sleep Quality Scale (SQS), a validated 28-item self-report instrument measuring sleep onset, maintenance, satisfaction, and daytime impact (score range 0–84; higher scores = poorer sleep).[13]

Quality of life was assessed using the WHO Quality of Life BREF (WHOQOL-BREF), a 26-item cross-culturally validated instrument covering physical health, psychological well-being, social relationships, and environmental domains (higher scores = better quality of life).[14]

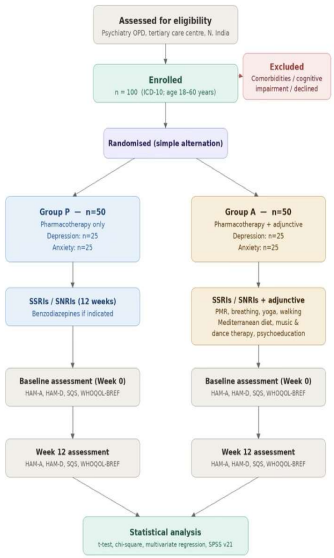

Figure 1: Study Methodology

Statistical Analysis

Data were analysed using SPSS v21.0. Continuous variables were compared between groups using independent samples t-tests and within groups using paired t-tests. Categorical variables were compared using chi-square tests. Multivariate linear regression was used to identify independent predictors of improvement in sleep quality and

quality of life at Week 12. Statistical significance was set at $p<0.05$ (two-tailed).[15]

RESULTS

One hundred patients were enrolled: 50 with depressive disorder and 50 with anxiety disorder, randomised to Group P (pharmacotherapy only, n=50) or Group A (pharmacotherapy plus alternative therapy, n=50). The mean age was 35.60±6.99 years; 52% were male. The two groups were well matched at baseline across all sociodemographic and clinical variables including age, sex, family type, residence, socioeconomic class, diagnosis, and duration of illness (all $p>0.05$), confirming successful randomisation.

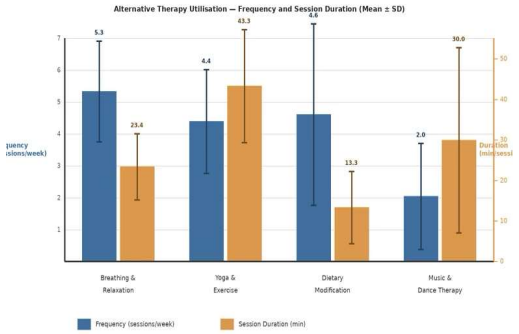

Figure 2: Pattern of Alternative Therapy Utilisation Among Study Participants (Alternative Therapy Group; n=50)

All four modalities were received by all 50 participants in Group A. Values are mean ± SD per participant across the 12-week programme. Mean programme adherence: 10.64 ± 1.01 weeks.

Breathing techniques and relaxation training had the highest weekly frequency (5.34±1.59 sessions/week). Yoga and physical exercise had the longest session duration (43.30±13.95 min/session). Dietary modification was delivered at 4.62±2.86 sessions/week. Music and dance therapy had the lowest frequency (2.04±1.67 sessions/week) but sessions were of moderate duration (29.96±22.92 min). Mean programme adherence was 10.64±1.01 weeks out of 12, indicating high overall compliance.

Primary Outcome Measures: Anxiety and Depression Scores

Table 1: HAM-A and HAM-D Scores at Baseline and Week 12 — Alternative Therapy Group vs Pharmacotherapy Only Group

Scale / Time Point	alternative therapy Group (n=50)		Pharmacotherapy Only Group (n=50)		p value (Week 12)
	Baseline	Week 12	Baseline	Week 12	Between-group
HAM-A — Anxiety Group (n=25 per arm)					
Mean ± SD	20.40 ± 1.63	10.20 ± 1.80	21.24 ± 2.35	15.96 ± 2.54	0.149 / <0.001 *
HAM-D — Depression Group (n=25 per arm)					
Mean ± SD	19.92 ± 2.16	11.04 ± 2.79	20.36 ± 1.50	16.64 ± 1.78	0.406 / <0.001 *

Both groups comparable at baseline (HAM-A $p=0.149$; HAM-D $p=0.406$). Change from baseline: HAM-A — alternative therapy −10.20, Pharmacotherapy Only −5.28; HAM-D — alternative therapy −8.88, Pharmacotherapy Only −3.72. * $p<0.001$.

By Week 12, the alternative therapy group achieved approximately twice the symptom reduction of the pharmacotherapy-only group on both HAM-A (−10.20 vs −5.28, $p<0.001$) and HAM-D (−8.88 vs −3.72, $p<0.001$).

Table 2: Comparison of SQS Domain Scores at Baseline and Week 12 Between Study Groups

SQS Domain	alternative therapy Group (n=50)		Pharmacotherapy Only Group (n=50)		p value (Week 12)
Mean ± SD	Baseline	Week 12	Baseline	Week 12	Between-group
Sleep Onset	14.10 ± 2.31	7.78 ± 2.22	14.22 ± 2.48	10.72 ± 2.06	<0.001*
Sleep Maintenance	14.10 ± 2.76	7.88 ± 2.15	13.74 ± 2.50	10.70 ± 2.31	<0.001*
Sleep Satisfaction	11.96 ± 2.70	6.60 ± 1.75	12.78 ± 2.22	9.86 ± 1.62	<0.001*
Daytime Impact	12.04 ± 2.22	6.60 ± 1.67	11.36 ± 1.92	9.64 ± 1.74	<0.001*
Total SQS Score	52.20 ± 5.11	28.86 ± 5.87	52.10 ± 4.79	40.92 ± 5.04	<0.001*

*Higher SQS scores indicate poorer sleep quality. p values reflect between-group comparison at Week 12 (independent samples t-test). All baseline between-group comparisons non-significant (all $p>0.05$). * $p<0.001$.*

At baseline, all four SQS domains were comparable between groups (all p>0.05). By Week 12, the alternative therapy group demonstrated significantly greater improvement across all domains (all p<0.001). Sleep Onset improved from 14.10±2.31 to 7.78±2.22 in Group A versus 14.22±2.48 to 10.72±2.06 in Group P. Sleep Maintenance, Sleep Satisfaction, and Daytime Impact showed parallel patterns. Total SQS score reduced by 23.34 points in Group A compared to 11.18 points in Group P — a more than twofold difference.

Secondary Outcome Measures: Quality of Life by Domain

Table 3: Comparison of WHOQOL-BREF Domain Scores at Baseline and Week 12 Between Study Groups

WHOQOL-BREF Domain	*alternative therapy Group (n=50)*		*Pharmacotherapy Only Group (n=50)*		*p value (Week 12)*
Mean ± SD	*Baseline*	*Week 12*	*Baseline*	*Week 12*	*Between-group*
Physical Health	*56.86 ± 5.98*	*72.02 ± 6.99*	*55.34 ± 6.15*	*62.84 ± 5.52*	*<0.001**
Psychological	*56.44 ± 5.60*	*71.64 ± 6.82*	*53.88 ± 5.44*	*61.80 ± 5.86*	*<0.001**
Social Relationships	*56.14 ± 6.07*	*71.06 ± 6.73*	*53.98 ± 5.41*	*60.92 ± 7.54*	*<0.001**
Environmental	*54.96 ± 5.67*	*69.36 ± 6.28*	*52.40 ± 5.54*	*60.28 ± 5.88*	*<0.001**
Total WHOQOL-BREF	*56.10 ± 4.90*	*71.02 ± 6.02*	*53.90 ± 4.82*	*61.46 ± 5.40*	*<0.001**

*Higher WHOQOL-BREF scores indicate better quality of life. * p<0.001. Note: Psychological and Environmental domain baseline scores showed borderline differences (p=0.023 and p=0.024 respectively); all Week 12 comparisons remained highly significant.*

All four WHOQOL-BREF domains showed significantly greater improvement in the alternative therapy group at Week 12 (all p<0.001). Physical Health domain showed the largest absolute gain in Group A (+15.16 points), followed by Psychological (+15.20), Social (+14.92), and Environmental (+14.40). Corresponding gains in Group P were substantially smaller across all domains (Physical +7.50, Psychological +7.92, Social +6.94, Environmental +7.88). Total WHOQOL-BREF increased by +14.92 in Group A versus +7.56 in Group P.

Predictors of Improvement: Multivariate Regression Analysis

Table 4: Predictors of Improvement in Sleep Quality and Quality of Life at Week 12 — Multivariate Linear Regression Analysis

Variable	Change in Sleep Quality (β, 95% CI)		Change in WHOQOL-BREF (β, 95% CI)	
	β (95% CI)	p value	β (95% CI)	p value
alternative therapy (vs Pharmacotherapy Only)	3.68 (−2.44 to 9.80)	0.241	−4.08 (−10.56 to 2.40)	0.220
Therapy Frequency (Total Weekly Dose, min/wk)	0.02 (0.01 to 0.03)	0.004 *	0.02 (0.01 to 0.03)	<0.001 *
Age (years)	−0.11 (−0.29 to 0.07)	0.216	−0.08 (−0.27 to 0.11)	0.429
Sex (Male)	0.09 (−2.48 to 2.66)	0.946	−0.22 (−2.94 to 2.50)	0.873
Diagnosis (Depressive Disorder)	2.22 (−0.35 to 4.78)	0.093	1.29 (−1.42 to 4.01)	0.354
Duration of Illness (months)	0.19 (0.04 to 0.35)	0.018 *	−0.08 (−0.25 to 0.08)	0.336
Model fit (R^2)	0.547		0.329	

Dependent variables: change in SQS score (positive = improvement) and change in WHOQOL-BREF (positive = improvement). β = unstandardised regression coefficient. * p<0.05. Model R^2 for SQS change = 0.547; WHOQOL-BREF change = 0.329. n=100.

Therapy frequency — measured as total weekly dose in minutes — was the strongest independent predictor of both sleep quality improvement (β=0.02, 95% CI 0.01–0.03, p=0.004) and quality of life improvement (β=0.02, 95% CI 0.01–0.03, p<0.001). Duration of illness independently

predicted SQS improvement (β=0.19, 95% CI 0.04–0.35, p=0.018), indicating that patients with longer illness duration achieved greater sleep gains, possibly reflecting greater baseline impairment and thus a larger potential for improvement. Treatment group allocation (adjunctive vs. pharmacotherapy only), age, sex, and diagnosis did not independently predict improvement after adjusting for therapy frequency and other covariates — suggesting that the quantum of therapy delivered is the active ingredient driving outcomes, rather than group membership per se.

DISCUSSION

The present prospective comparative interventional study evaluated the impact of a structured 12-week multimodal alternative therapy programme comprising progressive muscle relaxation (PMR), diaphragmatic breathing, yoga, brisk walking, Mediterranean-pattern dietary modification, music therapy, dance and movement therapy, and psychoeducation administered alongside standard pharmacotherapy in 100 patients with depressive or anxiety disorders at a tertiary care centre in Northern India. Both treatment groups were comparable at baseline across all sociodemographic and clinical variables (all p>0.05), confirming adequate randomisation. This design allowed the independent additive contribution of the alternative therapy programme to be rigorously quantified across four validated outcome domains.

By Week 12, Group A demonstrated significantly superior outcomes across all four measures HAM-A, HAM-D, SQS, and WHOQOL-BREF compared to Group P, with improvements approximately twice those of pharmacotherapy alone (all p<0.001). In the anxiety cohort, HAM-A scores reduced from 20.40±1.63 to 10.20±1.80 in Group A versus 21.24±2.35 to 15.96±2.54 in Group P (p<0.001), a total reduction of −10.20 versus −5.28. In the depression cohort, HAM-D reduced from 19.92±2.16 to 11.04±2.79 in Group A versus 20.36±1.50 to 16.64±1.78 in Group P (p<0.001), a total reduction of −8.88 versus −3.72. These findings are consistent with the conclusions of Ravindran and da Silva (2013), who in a systematic review of complementary and alternative therapies as adjuncts to pharmacotherapy for mood and anxiety disorders found evidence for additive clinical benefits across several non-pharmacological modalities, particularly exercise and yoga in depressive conditions. The magnitude of improvement in the present study approximately double across both primary outcome scales extends this evidence to a structured multimodal programme in a routine Indian tertiary care setting.[16]

It is important to contextualise these results within the nuances of the existing evidence. Ravindran and da Silva specifically noted that the evidence base for CAM augmentation is considerably stronger for depressive disorders than for anxiety disorders, with yoga and exercise demonstrating Level 2–3 evidence for depression augmentation but only Level 3 support for generalised anxiety and panic disorder. The present study observed clinically significant and statistically superior HAM-A improvements in Group A over Group P (−10.20 vs −5.28), suggesting that a structured multimodal programme may overcome the limitations of individual modalities through synergistic mechanisms where PMR, breathing techniques, yoga, and psychoeducation act concurrently on overlapping biological and psychological targets. The high programme adherence rate achieved (10.64±1.01 weeks out of 12) strengthens these findings and reflects the cultural familiarity with yoga and wellness traditions that may facilitate engagement in the Indian population.[16]

Domain-level SQS analysis revealed significant improvement across all four subscales — Sleep Onset, Sleep Maintenance, Sleep Satisfaction, and Daytime Impact — in Group A at Week 12 (all p<0.001), with a total SQS reduction of 23.34 points versus 11.18 in Group P. Sleep Onset improved from 14.10±2.31 to 7.78±2.22 in Group A compared to 14.22±2.48 to 10.72±2.06 in Group P, and Sleep Maintenance from 14.10±2.76 to 7.88±2.15 versus 13.74±2.50 to 10.70±2.31. The breadth of subscale benefit reflects the complementary sleep mechanisms of the programme: PMR and diaphragmatic breathing directly target autonomic hyperarousal the primary driver of sleep onset failure in anxiety through progressive parasympathetic activation; yoga enhances sleep architecture via modulation of cortisol and GABAergic neurotransmission; and Mediterranean dietary modification attenuates pro-inflammatory cytokines, including interleukin-6 and TNF-alpha, which are implicated in disrupted slow-wave and REM sleep in depressive disorders. The improvement in Daytime Impact scores (12.04±2.22 to 6.60±1.67 in Group A versus 11.36±1.92 to 9.64±1.74 in Group P) is particularly clinically relevant, as daytime fatigue and cognitive sequelae of sleep disruption contribute substantially to occupational impairment and reduced quality of life in both conditions.[5,6,7]

WHOQOL-BREF gains at Week 12 were broad-based and statistically significant across all four domains in Group A (all p<0.001). Physical Health improved by +15.16 points in Group A versus +7.50 in Group P, reflecting the direct conditioning and physiological benefits of yoga and aerobic walking. The Psychological domain showed the largest absolute gain (+15.20 versus +7.92), capturing the synergistic effects of mind-body practice, psychoeducation, and primary symptom reduction on subjective well-being and self-

efficacy. Social Relationships improved by +14.92 versus +6.94, a gain attributable in part to the interpersonal dimensions of group music and dance therapy, which engage social expressivity, peer connection, and shared emotional processing. Environmental domain gains (+14.40 versus +7.88) reflect functional adaptation to daily stressors facilitated by nutritional counselling and psychoeducation. Total WHOQOL-BREF gain of +14.92 versus +7.56 confirms that structured alternative therapy addresses the multidimensional functional deficits that pharmacotherapy alone does not adequately resolve, consistent with the CANMAT 2023 guideline recommendation that exercise and complementary therapies be formally incorporated as adjunctive treatments in major depressive disorder.[17]

A particularly novel and clinically actionable finding emerged from multivariate regression. Therapy frequency — operationalised as total weekly programme dose in minutes — was the strongest independent predictor of both sleep quality improvement (β=0.02, 95% CI 0.01–0.03, p=0.004, R^2=0.547) and quality of life improvement (β=0.02, 95% CI 0.01–0.03, p<0.001, R^2=0.329). Critically, treatment group allocation per se was non-significant after adjusting for dose (alternative therapy vs. pharmacotherapy only, p=0.241), indicating that the quantum of therapy delivered not group membership is the operative mechanism of benefit. This dose-response relationship has immediate clinical implications: services must be designed to maximise weekly engagement and total dose delivered, with adherence monitoring as an integral programme component rather than an afterthought. Duration of illness independently predicted sleep improvement (β=0.19, p=0.018), suggesting that patients with longer, more established presentations carry greater baseline sleep impairment and thus greater potential for measurable gain a finding that supports prioritising alternative therapy referral in patients with more chronic illness histories.[4]

This study has several limitations. The single-centre design limits generalisability to broader geographic and socioeconomic populations. The subgroup sample size of 25 per diagnostic-treatment cell limits statistical power for interaction analyses between diagnosis and treatment group. The multimodal intervention design precludes attribution of benefit to any individual therapy component. Follow-up was restricted to 12 weeks, preventing assessment of long-term durability, relapse risk, or sustained lifestyle change. The absence of blinding means performance and expectancy effects cannot be fully excluded. Adherence was assessed by self-report rather than objective monitoring, and no biomarkers were collected to corroborate clinical rating scale improvements. Future studies should address these limitations through multi-centre designs, component dismantling trials, extended follow-up, and integration of objective outcome measures.

CONCLUSION

Structured multimodal alternative therapy comprising PMR, breathing exercises, yoga, dietary modification, and music and dance therapy produced significantly superior outcomes in anxiety severity, depression severity, sleep quality, and quality of life at Week 12 compared to pharmacotherapy alone, with improvements approximately double those of pharmacotherapy alone.[16]

Domain-level analysis confirmed broad-spectrum benefit across all SQS and WHOQOL-BREF subscales. Therapy frequency was the primary modifiable predictor of outcome, independent of group allocation, age, sex, or diagnosis.

These findings support the formal incorporation of multimodal alternative therapy as a standard component of treatment for depressive and anxiety disorders in Indian psychiatric practice.[1,16,17]

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