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Original Article

Mind-Body Benefits of Eye Movement Desensitization and Reprocessing (EMDR) in Acute Respiratory Infections: A Randomized Clinical Study of Psychophysiological Outcomes

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Abstract

Objective: Acute respiratory infection (ARI) represent one of the foremost contributors to worldwide mortality. Psychological factors, notably anxiety, commonly obstruct patient recovery. Conventional medical approaches rarely account for the interplay between these psychological and physiological factors. This study aimed to determine the effects of EMDR on hemodynamic indices, anxiety levels, and sleep quality in hospitalized patients with ARI.
Method: In 2022, a six-month parallel-group randomized controlled trial was conducted in Yasouj, Iran, including 89 hospitalized patients with ARI. Participants were randomly assigned to either an intervention group receiving three bedside Eye Movement Desensitization and Reprocessing (EMDR) sessions (45–90 minutes each) or a control group receiving standard care. Outcomes included the Hamilton Anxiety Rating Scale (HARS), a hemodynamic monitoring checklist, and the Pittsburgh Sleep Quality Index (PSQI), assessed at baseline and post-intervention. Data were analyzed using SPSS version 26 with descriptive and inferential statistical methods.
Results: In the intervention group, mean heart rate, respiratory rate, blood pressure, and anxiety scores decreased significantly compared with the control group, whereas blood oxygen saturation increased significantly ($P \leq 0.05$). Sleep quality indices in the EMDR group exhibited statistically significant improvements relative to the control group at both the one-month and three-month follow-up assessments ($P = 0.001$). Within-group analyses further confirmed notable pre- to post-intervention changes across the key outcome variables exclusively in the EMDR arm ($P \leq 0.05$). In contrast, the control group displayed no statistically meaningful alterations in these parameters.
Conclusion: Taken together, the present findings position EMDR as a clinically viable, rapidly applicable, and pharmacologically independent therapeutic option for patients hospitalized with ARI.

Key words: *Anxiety; Respiratory Tract Infections; Hemodynamics; Psychophysiology; Sleep Quality*

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Acute respiratory infections are characterized by sudden onset, involvement of the respiratory tissues, and varying degrees of inflammatory responses. This inflammation may lead to impaired pulmonary mechanics and reduced efficiency of gas exchange (1). Epidemiological evidence indicates that in 2023, a global mortality attributable to respiratory tract infections reached an estimated 2.5 million individuals (2). In terms of disease incidence, standardized data further show that in 2019, the incidence rate of respiratory infections reached approximately 6,295 cases per 100,000 population (3), reflecting the extensive and persistent global burden of these conditions.

Nevertheless, clinical evidence suggests that the impact of these infections extends beyond their direct physiological consequences. Hospitalized patients with respiratory infections frequently experience varying degrees of psychological distress, particularly anxiety, which may adversely affect symptom perception, functional capacity, and the overall recovery trajectory during hospitalization (1). Empirical evidence indicates that heightened psychological stress confers increased susceptibility to viral respiratory illness, with stressed individuals demonstrating greater symptomatic expression upon pathogen exposure, and they may exhibit alterations in immune responses, including reduced antibody production and increased inflammatory activity (4, 5). This bidirectional process is primarily mediated through psychoneuroimmunological pathways (6, 7).

Specifically, during the acute phase of respiratory diseases, anxiety functions as an immediate response to the real threat of suffocation, altering breathing patterns, increasing respiratory resistance, and intensifying the subjective experience of dyspnea (8). However, this psychological response extends beyond perceptual dimensions, as activation of the stress axis is associated with dysregulation of inflammatory and autonomic processes, potentially impeding recovery in acute respiratory infections (9, 10). Moreover, psychological distress in these patients has been linked to autonomic and cardiovascular alterations, including disturbances in heart rate and blood pressure regulation (11). This psychophysiological arousal, which tends to intensify throughout the day, also affects nocturnal conditions, as sleep disturbance—often comorbid with anxiety can impair immune regulation and delay recovery (12). Concurrently, sleep quality in these patients is typically compromised due to multiple factors, such as dyspnea, hypoxia, pain, the hospital environment, and anxiety, and it is characterized by frequent awakenings, reduced deep sleep, and a subjective sense of non-restorative sleep.

Despite this complex interaction between physiological and psychological dimensions, conventional therapeutic approaches in inpatient settings are predominantly focused on pharmacological and respiratory support, with structured psychological interventions being less frequently integrated into care protocols (13). In such circumstances, clinicians often resort to anxiolytic medications to manage acute anxiety or sleep disturbances; however, although these agents may reduce acute distress, their use in patients with respiratory compromise is limited due to the risks of sedation, delayed onset of action, and potential respiratory depression (14, 15). Consequently, a significant gap exists in acute care, highlighting an increasing need for rapid, safe, and structured non-pharmacological therapeutic modalities amenable to bedside delivery within acute hospital environments (16).

In this context, initially conceived as a trauma-focused intervention, EMDR has undergone substantial evolution to encompass a broader therapeutic scope, demonstrating applicability across diverse anxiety-related and medically induced psychological disturbances (17, 18). Mechanistically, EMDR is grounded in the Adaptive Information Processing (AIP) model, through which bilateral stimulation is believed to facilitate the adaptive processing and integration of emotionally charged experiences and maladaptive memories (19). According to Francine Shapiro's theoretical framework, bilateral stimulation may influence the autonomic nervous system via activation of the orienting response, thereby modulating sympathetic activity and reducing stress-related arousal. Consequently, this process promotes a reduction in physiological tension and facilitates somatic relaxation without the need for extensive verbalization of emotional content an advantage that enhances its applicability in patients with physical limitations or cognitive fatigue in acute care settings (20).

Previous research suggests that EMDR can reduce anxiety and physiological arousal and improve sleep-related outcomes across various clinical populations (21-24). However, the majority of this evidence derives from chronic conditions, and it remains unclear to what extent these findings can be generalized to patients with acute respiratory infections. Despite theoretical support and preliminary evidence across different clinical domains, empirical data regarding the application of EMDR in hospitalized patients with acute respiratory infections, particularly in terms of feasibility and short-term effects under acute conditions, remain limited and warrant further investigation. Accordingly, given this knowledge gap and the existing uncertainty regarding the applicability of structured psychotherapeutic interventions in this patient population, the present study was deemed necessary.

This study was designed to evaluate the extent to which EMDR therapy affects anxiety symptoms, sleep quality, and key hemodynamic parameters, including body temperature, oxygen saturation, heart rate, and respiratory rate, in hospitalized patients with acute respiratory infections. By simultaneously assessing psychological and physiological outcomes, this research

aimed to examine the feasibility of integrating a structured mind–body intervention into the management of patients with acute respiratory conditions and to provide preliminary evidence for the design of future studies. Accordingly, the main hypothesis of the study was that EMDR would lead to significant improvements in sleep quality, anxiety levels, and hemodynamic parameters among patients with acute respiratory infections.

Materials and Methods

Study Design

This study employed a randomized, parallel-group design to rigorously evaluate the efficacy of EMDR therapy in modifying anxiety severity, selected physiological indices, and sleep quality outcomes among hospitalized patients diagnosed with ARIs. Before participant recruitment, the trial protocol was formally registered with the Iranian Registry of Clinical Trials under the identifier IRCT20210823052263N1. Ethical authorization was granted by the Research Ethics Committee of Yasuj University of Medical Sciences (reference: IR.YUMS.REC.1400.043), and all procedures were implemented in conformity with the ethical standards of the Declaration of Helsinki and the reporting requirements of the CONSORT 2010 framework.

Setting and Participants

Laboratory and Subjects Study participants were recruited from Shahid Jalil Hospital, Yasuj, during 2022–2023. Enrollment eligibility required fulfillment of the following criteria: adult age (≥ 18 years); physician-confirmed diagnosis of COVID-19-associated acute respiratory infection; peripheral oxygen saturation within the 85–93% range under ambient air conditions; and a HARS score falling between 25 and 30, reflecting moderate-to-severe anxiety. The SpO_2 range of 85–93% was selected to include patients with severe to early severe acute respiratory infections who did not yet require invasive ventilation, allowing them to benefit from noninvasive supportive interventions and enabling measurable improvements in oxygenation (25-27). HARS scores of 25–30 were chosen to capture moderate-to-severe clinical anxiety, ensuring sufficient sensitivity to detect intervention-related changes (28). Exclusion criteria included a known history of psychosis or bipolar disorder, current use of psychoactive medications or substances, severe hearing or visual impairment that precludes participation in online assessments, and clinical deterioration necessitating noninvasive ventilation (NIV) face mask therapy or intubation. The per-protocol analysis excluded participants who withdrew consent or missed any intervention session. The data for this study were collected over six months from patients who met the study's eligibility criteria.

Sample Size

Power analysis conducted via Altman's nomogram indicated a minimum requirement of 96 participants (29), subsequently inflated by 10% to accommodate anticipated dropout, yielding a target enrollment of 106 individuals (30). The calculation was premised on a bilateral significance threshold of $\alpha = 0.05$, a statistical power of 80%, and an anticipated effect magnitude of $d = 0.65$ for the primary outcome measure (HARS, ensuring sufficient power was achieved between groups (31). This effect size was selected based on meta-analytic and experimental studies of EMDR in anxiety disorders and validated clinical criteria (32, 33).

Randomization and Allocation Concealment

Balanced group allocation at a 1:1 ratio was achieved through a block randomization methodology. Generation of the allocation sequence was delegated to an independent biostatistician utilizing dedicated randomization software; the sequence was subsequently encrypted and kept concealed from enrolling investigators to preclude selection bias. Blinding of the investigators responsible for enrollment ensured that they remained unaware of which assignments had been made, thus protecting internal validity in this instance.

A total of 96 eligible patients were enrolled and randomly allocated in equal proportions to two parallel groups: an intervention group receiving Eye Movement Desensitization and Reprocessing (EMDR; n = 48) and a control group (n = 48).

During follow-up, four participants were lost to follow-up in the intervention group (primarily due to transfer to other healthcare facilities), and three participants withdrew from the control group (mainly due to failure to complete the study instruments). The final analysis was conducted on data from 44 participants in the intervention group and 45 participants in the control group. Blinding of patients and psychotherapists was not feasible due to the nature of the intervention.

Blinding

Complete masking was precluded by the active and interactive character of the EMDR intervention; accordingly, neither participants nor treating therapists could be blinded to group assignment. To mitigate this inherent limitation, independent outcome evaluators and statisticians remained masked throughout the data collection and analysis phases.

Interventions

Intervention group (EMDR): Participants in this group received three EMDR therapy sessions over three consecutive days at their bedside. Each session was conducted according to the standard eight-phase EMDR protocol (Table 1) and was typically scheduled to last 60 to 90 minutes. However, session duration was applied flexibly according to the patients' clinical condition, and the intervention was not necessarily delivered in a continuous manner. In the event of fatigue, dyspnea, decreased oxygen saturation, or any other form of clinical instability, the session was immediately

interrupted or shortened. The primary focus of the sessions was on processing emotions and cognitions associated with the illness and the experience of hospitalization. Concurrently, all patients received standard pharmacological care.

Table 1. Structured Eight-Stage Protocol of Eye Movement Desensitization and Reprocessing (EMDR)

Stage	Title	Description
1	History	Assessment of the client's capacity to cope with potential distress that may arise during the processing of maladaptive information.
2	Explanation and Preparation	Establishment of a therapeutic alliance, explanation of the EMDR procedure and its effects, clarification of therapeutic expectations, and preparation of the client for the treatment process.
3	Assessment	Identification of the target memory, including associated images, symbols, and client beliefs regarding the event; exploration of somatic sensations linked to post event beliefs; substitution of maladaptive beliefs with positive cognitions using a seven-point scale; concurrent presentation of the traumatic image alongside the negative belief; and measurement of client distress using a ten-point Subjective Units of Distress Scale (SUDS).
4	Targeted Desensitization	Focus on the client's negative belief while the therapist performs rapid, bilateral finger movements in front of the client. The client follows these movements visually. This process is repeated until the distress level reduces to zero or one on the SUDS scale.
5	Installation of Positive Cognition	Cognitive restructuring aimed at strengthening the client's positive beliefs to replace the prior maladaptive cognition.
6	Body Scan and Reinforcement	Requesting the client to simultaneously hold in awareness the target event and the positive cognition while monitoring for residual muscular tension or discomfort.
7	Closure	At the end of the session, the client is invited to describe any distressing images, thoughts, or emotions experienced during therapy and to record these experiences—including thoughts, conditions, dreams, memories, or other issues—in a personal journal.
8	Reevaluation	Reassessment of previously processed targets to evaluate therapeutic progress and identify any residual distress.

Control group: Participants received only standard medical care, including antivirals, corticosteroids, and oxygen therapy. No psychotherapeutic intervention or dedicated interaction was provided to this group.

Before inclusion in the study, all participants were provided with comprehensive written and verbal explanations of the study procedures, potential risks, and their right to voluntary participation, and thereafter they provided documented informed consent. No individual was denied standard care. Study data were stored with strict confidentiality and precise coding to ensure the full protection of patient privacy.

Safety and Adverse Event Monitoring

Consistent with existing evidence, EMDR is considered safe in inpatient settings, with no serious adverse events reported. Mild emotional discomfort and restlessness were identified as possible adverse effects and were carefully documented and managed throughout the study.

Data Collection Instruments

Data were obtained through a standardized four-section data collection form (Sections A–D), with each section addressing a distinct domain of variables.

Section A: Sociodemographic and Clinical Characteristics

This section covered patients' age, sex, educational attainment, comorbid conditions, date of hospital admission, and date of discharge.

Section B: Hemodynamic and Physiological Parameters

Physiological indicators included respiratory rate, heart rate, systolic and diastolic blood pressure, peripheral oxygen saturation (SpO_2), and body temperature. All measurements were recorded using a bedside monitoring system (Aradp 10).

Section C: Anxiety Measurement

Anxiety was assessed using the Hamilton Anxiety Rating Scale (HARS), a clinician-rated 14-item instrument. Each item is scored on a five-point Likert scale ranging from 0 (absent) to 4 (severe), yielding a total score between 0 and 56, with higher scores indicating greater anxiety severity. Standard severity

thresholds were applied (≤ 17 mild, 18–24 mild to moderate, and 25–30 moderate to severe). The instrument has demonstrated strong reliability, with Cronbach's alpha values of 0.92 (Hallit *et al*., 2020) (34), and 0.85 in Iranian populations (Asghari *et al*.); these established psychometric properties were adopted for the present study (35).

Section D: Sleep Quality Assessment

Subjective sleep quality was assessed via the PSQI, an internationally validated instrument originally developed by Buysse and colleagues (1989). This 18-item questionnaire evaluates sleep perceptions across a retrospective four-week window through seven distinct domains including latency, duration, efficiency, disturbance frequency, hypnotic medication use, and daytime functional impairment alongside a global quality rating. Domain scores are summed to yield a composite index spanning 0–21, wherein a threshold below 5 characterizes adequate sleep quality and values at or above 6 indicate clinically meaningful sleep impairment. The original study reported a Cronbach's alpha of 0.83 (37), and Iranian studies have confirmed reliability at alpha = 0.77 (35). In the current study, reliability assessment relied on these prior reports.

Data Collection Schedule

Hemodynamic indices and anxiety levels were measured in both groups at baseline and immediately post-intervention. These assessments were conducted in person at the patients' bedside using standardized clinical instruments. Sleep quality was evaluated at three time points: baseline, one month, and three months following completion of the intervention. Baseline and in-hospital evaluations were conducted face-to-face, whereas post-discharge follow-up assessments were administered via a secure web-based electronic questionnaire using the previously described standardized instrument.

Statistical Analysis

Data analysis was performed using both descriptive and inferential statistical methods. Continuous variables were summarized as means and standard deviations, while categorical variables were presented as frequencies and percentages. Prior to statistical testing, the normality of data distribution was assessed using the Kolmogorov–Smirnov test. For between-group comparisons, the independent samples t-test was applied when the assumption of normality was met; otherwise, the Mann–Whitney U test was used as a non-parametric alternative, whereas categorical variables were analyzed using the chi-square test. Within-group changes between pre- and post-intervention measurements were examined using either paired t-tests or Wilcoxon signed-rank tests, depending on the distributional characteristics of the data. Longitudinal changes spanning multiple assessment points were modeled through repeated-measures ANOVA. All statistical procedures were executed in SPSS version 26 with a pre-specified two-tailed α of 0.05.

Results

Per-protocol analysis incorporated complete datasets from 44 intervention-arm participants and 45 control-arm participants, with sex distribution balanced at a 1:1 ratio across groups. Participants' mean age was 40.7 years (SD = 11.58). No statistically significant differences were observed between the two groups in baseline demographic and clinical characteristics (P > 0.05) (Table 2).

Independent t-test analyses revealed that, relative to control-arm participants, those in the EMDR group exhibited statistically significant reductions in mean values for heart rate, respiratory frequency, systolic arterial pressure, diastolic arterial pressure, and composite anxiety scores following the intervention period. showed a statistically significant decrease one and three months after the intervention was implemented (P value = 0.001) (Table 3).

Table 2. Baseline Demographic Characteristics of Patients with Acute Respiratory Infections (ARI) in the EMDR Intervention and Control Groups

Variable		Intervention Mean (SD)	Control Mean (SD)	P value*
		40.43	41.10	0.79
Gender	Male	24 (48)	26 (52)	0.83
	Female	24 (52.2)	22 (47.8)	
Education	High school	4 (4.2)	4 (4.2)	0.88
	Diploma	10 (10.4)	14 (14.6)	
	Associate degree	13 (13.5)	13 (13.5)	
	Bachelor's degree	18 (18.8)	15 (15.6)	
	Master's degree	3 (3.1)	2 (2.1)	
Job	Self employed	20 (20.8)	20 (20.8)	0.85

Variable		Intervention Mean (SD)	Control Mean (SD)	P value*
Underlying disease	Employee	19 (19.8)	17 (17.7)	0.76
	Jobless	9 (9.4)	11 (11.5)	
	Diabetes	2 (2.1)	2 (2.1)	
	HTN	19 (19.8)	22 (22.9)	
	Cancer	9 (9.4)	6 (6.3)	
	Kidney	2 (2.1)	3 (3.1)	
	Heart	4 (4.2)	1 (1)	
	Immunodeficiency	0 (0)	1 (1)	
	Respiratory	7 (7.3)	9 (9.4)	
	Pregnant	1 (1)	1 (1)	
	None	4 (4.2)	2 (2.1)	

SD=Standard Deviation; HTN=Hypertension

Table 3. Baseline Clinical Characteristics of Patients with ARI in the EMDR Intervention and Control Groups

Variable	Intervention Mean (SD)	Control Mean (SD)	P value*
Anxiety	26.79 (1.28)	27.29 (1.47)	0.08
Heart beat	91.43 (9.39)	94.62 (10.02)	0.11
Systolic blood pressure	149.16 (13.93)	146.83 (11.30)	0.37
Diastolic blood pressure	103 (6.85)	101 (6.29)	0.17
Oxygen saturation level	87.02 (1.75)	86.79 (2.37)	0.59
Respiration rate	25.87 (3.07)	26.95 (4.70)	0.13
Temperature	38.23 (0.6)	38.09 (0.7)	0.28
Sleep quality	13.83 (2.66)	14.02 (2.32)	0.71

Within-group changes from pre- to post-intervention were analyzed using paired-sample t-tests. The results demonstrated that heart rate, respiratory rate, systolic and diastolic blood pressure, anxiety levels, and sleep quality improved in both groups after the intervention; however, these improvements were significantly greater in the intervention group than in the control group ($P \leq 0.05$).

Oxygen saturation also increased across both groups, with a significantly higher improvement observed in the intervention group ($P = 0.001$). In contrast, no statistically meaningful difference was identified between groups regarding changes in body temperature ($P \geq 0.05$), as shown in Table 4.

Table 4. Changes in Anxiety and Hemodynamic Indicators from Pre- to Post-Intervention in the EMDR and Control Groups of Patients with ARI

	End of Study			Mean Difference (After-Before)		
	Intervention Mean (SD)	Control Mean (SD)	P-value Cohen's d1	Intervention Mean (SD)	Control Mean (SD)	P-value Cohen's d[1]
Anxiety	18.81 (2.64)	25.79 (1.39)	0.001 0.923	7.97 (2.66)	1.5 (0.92)	0.0010 0.846
Heart beat	73.45 (5.30)	85.33 (7.26)	0.001 0.914	17.97 (9.24)	9.29 (4.34)	0.001 0.814
Systolic blood pressure	133.31 (6.92)	135.04 (6.98)	0.001 0.946	15.85 (8.47)	11.79 (6.06)	0.008 0.823
Diastolic blood pressure	92.75 (7.02)	94.25 (6.70)	0.001 0.925	10.25 (6.02)	6.91 (3.31)	0.005 0.825

	End of Study			Mean Difference (After-Before)		
	Intervention Mean (SD)	Control Mean (SD)	P-value Cohen's d1	Intervention Mean (SD)	Control Mean (SD)	P-value Cohen's d[1]
Oxygen saturation level	93.22 (1.01)	91.22 (1.20)	0.0010 0.943	6.20 (1.82)	4.43 (2.22)	0.001 0.852
Temperature	37.47 (0.22)	44.55 (4.56)	0.3150 0.514	0.76 (.31)	6.46 (3.3)	0.306 0.552
Respiration rate	17.64 (3.21)	20.41 (2.12)	0.001 0.914	8.22 (4.46)	4.32 (2.22)	0.001 0.856
Sleep quality	10.79 (2.42)	12.60 (2.24)	0.001 0.954	3.04 (0.89)	1.41 (0.61)	0.001 0.852

1.Cohen's d=Point Estimate

At baseline, mean sleep quality scores were 13.83 ± 2.66 in the intervention group and 14.02 ± 2.32 in the control group, with no significant intergroup difference (P = 0.71). Following the intervention, sleep quality improved in both groups; however, the extent of improvement was significantly greater in the intervention group, as confirmed by statistical analysis (P = 0.001).

Moreover, repeated-measures analysis of variance across three time points (baseline, immediately post-intervention, and three-month follow-up) indicated a significant effect of group over time, reflecting different trajectories of sleep quality changes between the EMDR and control groups. As reported in Table 4, sleep quality scores in the intervention group differed significantly from those in the control group at both post-intervention and follow-up assessments (Table 5).

Table 5. Sleep Quality Scores at Baseline, Post-Intervention, and Three-Month Follow-Up in the EMDR and Control Groups

Group	(I) Time	(J) Time	Mean difference (Jn– I1)a	Std. error	Sig.b	95% confidence interval for difference	
						Lower bound	Upper bound
Intervention	1	1	3.042	0.111	0.000	2.821	3.262
		2	6.667a	0.173	0.000	6.324	7.010
Control	1	1	1.417	0.111	0.000	1.196	1.637
		2	3.208a	173.	0.000	2.865	3.551

Based on the estimated marginal means
a: The mean differences was Jn –I1 (Time I1= Baseline& Time J1= one-month Time J2= three months following completion of the intervention
b. Adjustment for multiple comparisons. The mean difference is significant at the .05 level.

Discussion

The current randomized controlled trial sought to characterize the psychophysiological effects of EMDR therapy across a triad of outcome domains: anxiety severity, nocturnal sleep quality, and selected hemodynamic indices within an acute inpatient respiratory infection context. The findings indicated that, compared with standard care, EMDR was linked to more pronounced reductions in anxiety levels, enhanced sleep quality, and beneficial alterations across multiple physiological indicators. The differential anxiety trajectory observed between groups, with the EMDR arm demonstrating significantly greater symptom reduction, provides preliminary evidence for the capacity of this intervention to attenuate disease-associated psychological distress in acute hospitalization contexts. Consistent with this finding, previous studies in patients with COVID-19 have reported reductions in anxiety and depressive symptoms, and significant decreases in anxiety have also been observed among patients admitted to intensive care units (38, 39). Furthermore, some pilot studies have reported a relative persistence of these effects in short-term follow-up assessments, underscoring the potential utility of this intervention in acute care contexts.

However, inconsistent findings have also been reported. In certain populations, such as students with primary dysmenorrhea, no significant efficacy has been demonstrated (40), and when compared with cognitive-behavioral therapy, no statistically significant differences between groups were observed after controlling for confounding variables (41). In addition, more limited effects have been reported in patients with chronic obstructive pulmonary disease (42). These inconsistencies are likely attributable to differences in sample characteristics, disease severity and nature, as

well as heterogeneity in intervention protocols and duration.

Within the AIP theoretical framework, EMDR is understood to exert its anxiolytic effects through the systematic reactivation and adaptive reconsolidation of distress-laden memories, thereby diminishing their affective salience and reducing associated autonomic activation (43). In patients with acute respiratory infections, hospitalization, physical symptoms, and fear of disease-related consequences may serve as primary triggers of anxiety; thus, the observed reduction in anxiety can likely be interpreted within the framework of emotional regulation and cognitive reorganization processes.

Beyond psychological outcomes, the present data indicated that hemodynamic and respiratory parameters encompassing blood pressure indices, cardiac rate, respiratory frequency, and peripheral oxygen saturation showed measurable improvement in the intervention arm. In line with these results, corroborating evidence from prior investigations has documented EMDR-associated reductions in cardiac rate and arterial pressure, alongside favorable shifts in autonomic balance as reflected by heart rate variability metrics (44, 45). Accordingly, the beneficial effects observed in this study may be attributed to the modulation of autonomic nervous system balance. Nevertheless, some studies in chronic respiratory diseases and long COVID conditions have reported symptomatic improvement without significant changes in oxygen saturation (46, 47), suggesting the role of underlying disease pathophysiology in modulating treatment response.

Regarding sleep quality, the results indicated that although both groups showed relative improvement, the intervention group demonstrated more sustained and greater improvement across follow-up assessments. This finding is consistent with recent studies in chronic patient populations and has been associated with positive changes in sleep architecture, including increased REM sleep (48). However, some meta-analyses have suggested that these effects may diminish over the long term (49). From a mechanistic perspective, this improvement is likely attributable to reduced sympathetic arousal and facilitated emotional memory processing along pathways analogous to REM sleep neurophysiology (50).

Limitation

In this study, the active and interpersonally embedded character of EMDR precluded double-blinding of participants and clinicians —an inherent methodological constraint in behavioral intervention research. The absence of a matched attention-control condition further restricts the attribution of observed effects exclusively to EMDR's specific therapeutic mechanisms, as contributions from expectancy, therapeutic alliance, and nonspecific interaction effects cannot be formally excluded. In addition, the relatively small sample size reduces the generalizability of the findings to other respiratory-related conditions. The lack of long-term follow-up assessments also limited the ability to draw firm conclusions regarding the durability and stability of the intervention effects over time. Furthermore, certain biological indices, including inflammatory biomarkers, were not measured; therefore, the interpretation of the underlying mechanisms remains largely theoretical

Conclusion

Collectively, the evidence generated by this randomized trial supports the characterization of EMDR as a time-efficient, clinically practical, and safety-confirmed intervention for the inpatient ARI population, capable of concurrently reducing anxiety burden, enhancing sleep continuity and quality, and yielding favorable modification of hemodynamic parameters including cardiac rate, arterial pressure, and oxygen saturation levels. The significance of this study lies in its provision of empirical evidence supporting the application of a structured psychotherapeutic approach within the context of acute medical care, a domain that has historically received limited attention. These results underscore the potential of EMDR as a non-pharmacological mind–body intervention and suggest that integrating evidence-based psychological interventions into acute care settings may facilitate the convergence of psychological support and physiological improvement. However, given the exploratory nature of some outcomes, future studies are warranted to examine the long-term sustainability of effects, compare EMDR with other interventions, and further elucidate the underlying psychophysiological mechanisms. Ultimately, this study highlights the importance of advancing a holistic approach in acute care, one that simultaneously addresses both mental health and physical well-being. Overall, these findings require confirmation in future studies with larger sample sizes and more robust methodological designs. The EMDR intervention was not associated with any observable adverse events throughout the study period.

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Conflict of Interest

None.

Author's Contributions

MA: Conceptualization, study design, and manuscript drafting.
MD: Study design and data collection.
AA: Data collection and manuscript review.
ZS: Clinical supervision, data collection, and manuscript review.
SPS: Data collection and writing the Introduction section of the manuscript.
SHF: Data management, statistical analysis, and interpretation of the findings.
AH: Conceptualization, supervision of the study, methodology, data interpretation, critical revision of the manuscript, and final approval of the version to be published.

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