Integrative Practices and Patient Safety in Intensive Care Units: An Integrative Review

Práticas Integrativas e Segurança do Paciente em Unidades de Terapia Intensiva: Uma Revisão Integrativa

Prácticas Integrativas y Seguridad del Paciente en Unidades de Cuidados Intensivos: Una Revisión Integrativa

RESUMO

Objetivo: Analisar as evidências disponíveis na literatura científica sobre a contribuição das práticas integrativas e complementares para a segurança do paciente em unidades de terapia intensiva. **Método:** Revisão integrativa, conduzida em bases de dados da área da saúde, com inclusão de estudos originais disponíveis na íntegra, sem recorte temporal. A seleção ocorreu por leitura de títulos, resumos e textos completos, e os dados foram analisados por síntese narrativa. **Resultados:** Foram incluídos oito estudos, publicados entre 2013 e 2024, com diferentes delineamentos. As práticas mais investigadas foram musicoterapia, aromaterapia, auriculoterapia, massagem terapêutica e meditação guiada. Observou-se redução de ansiedade, dor e estresse, além de melhora de parâmetros fisiológicos e diminuição do uso de sedativos. Também foram identificados benefícios para profissionais, como redução da sobrecarga emocional. **Conclusão:** As práticas integrativas e complementares mostram-se estratégias seguras e promissoras no contexto intensivo, contribuindo para o cuidado humanizado e para a segurança do paciente.

DESCRITORES: Práticas Integrativas e Complementares; Terapias Complementares; Segurança do Paciente; Unidade de Terapia Intensiva; Musicoterapia; Aromaterapia.

ABSTRACT

Objective: To analyze the evidence available in the scientific literature regarding the contribution of integrative and complementary practices to patient safety in intensive care units. **Method:** Integrative review conducted in health-related databases, including original studies available in full text, with no time restrictions. Selection was based on a review of titles, abstracts, and full-text articles, and data were analyzed using narrative synthesis. **Results:** Eight studies published between 2013 and 2024 with different study designs were included. The most investigated practices were music therapy, aromatherapy, auriculotherapy, therapeutic massage, and guided meditation. Reductions in anxiety, pain, and stress were observed, along with improvements in physiological parameters and a decrease in the use of sedatives. Benefits for healthcare professionals were also identified, such as a reduction in emotional overload. **Conclusion:** Integrative and complementary practices prove to be safe and promising strategies in the intensive care setting, contributing to humanized care and patient safety.

DESCRIPTORS: Integrative and Complementary Practices; Complementary Therapies; Patient Safety; Intensive Care Unit; Music Therapy; Aromatherapy.

RESUMEN

Objetivo: Analizar la evidencia disponible en la literatura científica sobre la contribución de las prácticas integrativas y complementarias a la seguridad del paciente en las unidades de terapia intensiva. **Método:** Revisión integrativa, realizada en bases de datos del ámbito de la salud, con inclusión de estudios originales disponibles en su totalidad, sin límite temporal. La selección se realizó mediante la lectura de títulos, resúmenes y textos completos, y los datos se analizaron mediante síntesis narrativa. **Resultados:** Se incluyeron ocho estudios, publicados entre 2013 y 2024, con diferentes diseños. Las prácticas más investigadas fueron la musicoterapia, la aromaterapia, la auriculoterapia, el masaje terapéutico y la meditación guiada. Se observó una reducción de la ansiedad, el dolor y el estrés, además de una mejora de los parámetros fisiológicos y una disminución del uso de sedantes. También se identificaron beneficios para los profesionales, como la reducción de la sobrecarga emocional. **Conclusión:** Las prácticas integrativas y complementarias se muestran como estrategias seguras y prometedoras en el contexto de cuidados intensivos, contribuyendo a una atención humanizada y a la seguridad del paciente.

PALABRAS CLAVE: Prácticas integrativas y complementarias; Terapias complementarias; Seguridad del paciente; Unidad de terapia intensiva; Musicoterapia; Aromaterapia.

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INTRODUCTION

In September 2023, the World Health Organization (WHO) reported on its official channels that approximately one in ten hospitalized patients suf-

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fers some form of preventable harm, with more than 50% of these events occurring in critical care units, such as the Intensive Care Units (ICUs) of the . Because they are highly complex environments within the hospital system, ICUs represent settings with an increased risk for adverse events, such as Healthcare-Associated Infections (HAIs), communication failures, and inappropriate therapeutic interventions, compromising patient safety[1,2] .

In parallel with this situation, the Unified Health System (SUS) has made progress in institutionalizing approaches that promote comprehensive care, including Integrative and Complementary Health Practices (PICS). In 2006, the National Policy on Integrative and Complementary Health Practices (PNPIC) was established, incorporating therapeutic modalities based on traditional health systems, folk knowledge, and integrative techniques focused on health promotion, disease prevention, and the management of chronic conditions. In 2023, more than 7 million PICS sessions were recorded in the public healthcare system, reflecting the increased acceptance and use of these practices by the population and by healthcare professionals[3,4] .

PICS encompasses practices such as acupuncture, aromatherapy, meditation, yoga, reiki, art therapy, and music therapy, based on a holistic perspective of health that considers the human being in their entirety—body, mind, and spirit—and values the individual's active role in the care process. Furthermore, the World Health Organization (WHO) recommends that national health systems progressively integrate these practices in a safe, effective, and evidence-based manner, promoting person-centered and culturally sensitive care[2,5] .

The scientific literature has demonstrated the benefits of PICS in reducing physical and emotional symptoms, such as pain, anxiety, stress, and insomnia, especially in cancer patients, in palliative care, and in the surgical setting. In ICUs, although the incorporation of these practices is still in its infancy, there are promising reports of non-invasive interventions that contribute to clinical stabilization, improved sleep quality, reduced blood pressure, and emotional regulation in critically ill patients. Controlled clinical studies suggest that practices such as music therapy and guided meditation can significantly reduce the use of sedatives and the duration of mechanical ventilation, contributing to patient safety[6,7] .

Despite these advances, the effective integration of PICS in ICUs still faces structural, epistemological, and cultural challenges. Healthcare professionals frequently report a lack of knowledge regarding the scientific evidence for these therapies, the absence of institutionalized protocols, and resistance from the care team regarding the legitimacy and of these approaches in highly complex settings. Given this, it is essential to generate scientific evidence that explores the impacts of PICS on patient safety indicators in ICUs, contributing to the consolidation of a safer, more effective, and comprehensive clinical practice.

This study is justified by the opportunity to explore synergies between integrative practices and patient safety in ICUs. The research addresses Sustainable Development Goal number 3, titled "Good Health and Well-being." Furthermore, it aligns with the Ministry of Health's Research Priority in the area of "Quality and Safety in Health Services and Systems," as outlined in the National Health Research Policy 2021–2025.

Thus, this article presents the following research question: What evidence is available in the scientific literature regarding the contribution of integrative and complementary practices to patient safety in intensive care units? To answer this, the objective was established to analyze the evidence available in the scientific literature regarding the contribution of integrative and complementary practices to patient safety in intensive care units.

METHOD

This is an integrative literature review designed to analyze the available scientific evidence on the contribution of Integrative and Complementary Practices (ICP) to patient safety in Intensive Care Units (ICUs). The integrative review is a type of secondary study that allows for the synthesis of knowledge regarding a specific phenomenon, bringing together research results with different methodological designs and providing support for evidence-based clinical practice[8] .

In conducting this study, we strictly followed the six stages of the integrative review proposed by Mendes, Silveira, and Galvão[8] , namely: (1) formulation of the guiding question, (2) definition of study inclusion and exclusion criteria and conducting the literature search, (3) data extraction from the selected studies, (4) critical appraisal of the included studies, (5) analysis and interpretation of the results, and (6) presentation of the review with a synthesis of the knowledge produced.

The guiding question was formulated based on the PICo strategy, adapted for integrative reviews. Thus, the following question was formulated: What is the evidence available in the scientific literature regarding the contribution of integrative and complementary practices to patient safety in intensive care units?

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Table 1. Table with research acronym.

ACRONYM	DESCRIPTION	MESH TERMS
P (Population):	Healthcare professionals	DC: Health Personnel
		DNC: Health Personnel,
		Health Care Providers, Health Professionals, Health Professionals, Health Professional, Health Professional, Health Worker, Health Worker, Health Workers, Health Workers
I (Intervention):	Integrative and complementary practices (ICPs)	DC: Complementary Therapies
		DNC: Complementary and Integrative Practices, Integrative and Complementary Practices, Complementary and Integrative Health Practices, Integrative and Complementary Health Practices
Co (Context):	Intensive Care Units (ICUs)	DC: Intensive Care Units
		DNC: Intensive Care Center,
		Intensive Care Centers, ICU, Intensive Care Unit, Adult Intensive Care Unit, ICU
SEARCH TERMS IN MEDLINE, LILACS, BDENF, AND MOSAICO VIA VHL		
(Healthcare Personnel) OR (Healthcare Staff) OR (Healthcare Providers) OR (Healthcare Professionals) OR (Health Professionals) OR (Healthcare Professional) OR (Health Professional) OR (Healthcare Worker) OR (Health Worker) OR (Healthcare Workers) OR (Health Workers) AND (Complementary Therapies) OR (Complementary and Integrative Practices) OR (Integrative and Complementary Practices) OR (Complementary and Integrative Health Practices) OR (Integrative and Complementary Health Practices) AND (Intensive Care Units) OR (Intensive Care Center) OR (Intensive Care Centers) OR (ICU) OR (Intensive Care Unit) OR (Adult Intensive Care Unit) OR (ICU)		

Source: Authors, 2025.

The search for studies was conducted in the Virtual Health Library databases *Medical Literature Analysis and Retrieval System Online* (MEDLINE), Latin American and Caribbean Health Sciences Literature (LILACS), and Nursing Database (BDENF), selected for their relevance in the health field and broad international coverage. The controlled descriptors "Critical Care" OR "Intensive Care Units" AND "Complementary Therapies" OR "Integrative Medicine" AND "Patient Safety," as well as their equivalents in the Descriptors in Health Sciences (DeCS), were used. The search was conducted between April and June 2025.

Original studies were included, provided they were available in full, published in any language, without time restrictions, and addressed the application of integrative practices in the context of ICUs with a focus on patient safety. Duplicate articles, reviews, editorials, letters, event summaries, case reports, and studies that did not adhere to the central theme were excluded. Study screening was conducted in three stages: title screening, abstract screening, and full-text screening, using the Rayyan software, which enables collaborative and blinded analysis among reviewers.

Data extraction followed a tool developed for this review, containing the following variables: author, year, country, study type, objective, type of PICS used, study population, outcomes assessed, and main results. For the critical assessment of methodological quality, the evidence levels classification by Melnyk and Fineout-Overholt[9] (2011) was used, which allows assigning a degree of robustness to scientific findings based on the study design.

Data analysis was conducted through narrative synthesis, categorizing the findings according to the types of interventions used, the outcomes associated with patient safety (e.g., reduction of adverse events, use of sedatives, well-being, therapeutic communication), as well as their clinical and organizational implications. The results will be presented in a descriptive and interpretive manner, respecting the principles of data reliability and integrity.

As this is a secondary study based on data available in the literature, this review did not directly involve human subjects and is therefore exempt from review by a Research Ethics Committee, in accordance with Resolution No. 510/2016 of the National Health Council.

RESULTS

The database search, based on the proposed strategy, initially yielded 126 studies. After screening titles and abstracts, 58 articles remained for full-text reading. Of these, 8 met the inclusion criteria and comprised the final sample of this integrative review.

The studies were published between 2013 and 2024 in different countries and featured varied methodological designs, including randomized clinical trials, quasi-experimental studies, and observational studies

Analysis of the eight selected articles showed that the use of PICS in

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the ICU setting has proven to be an adjunctive care strategy, especially in the management of pain, anxiety, and stress in critically ill patients, as well as in supporting the well-being of the healthcare team. Among the most investigated therapies were music therapy, auriculotherapy, aromatherapy, therapeutic massage, and guided meditation, applied either alone or in combination.

There was consensus among the studies that such practices, when used in conjunction with conventional treatment, contributed to the reduction of stress-related physiological parameters such as heart rate, blood pressure, and cortisol levels, thereby promoting greater relaxation and improved comfort in patients admitted to the ICU. Music therapy and auriculotherapy emerged as the most frequently employed interventions, with consistent results regarding the reduction of anxiety and pain in patients undergoing invasive procedures.

Regarding the impact on healthcare professionals, the studies indicated that the integration of PICS in critical care settings can help alleviate emotional overload and prevent burnout syndrome, promoting greater satisfaction and a renewed sense of purpose in care. Although fewer in number, some articles highlighted training experiences for nurses and physicians in the use of PICS, demonstrating greater acceptance and engagement of the team with these strategies.

Despite the predominance of positive results, methodological heterogeneity was observed in the study designs, ranging from controlled clinical trials to quasi-experimental studies and qualitative research. This diversity limits the generalizability of the findings, although the convergence of results points to relevant clinical and psychosocial benefits.

Overall, the articles agree that the implementation of PICS in the ICU is feasible, safe, and effective as a complementary practice, although differences exist regarding the degree of impact observed among the different types of intervention and the structural difficulties for their large-scale implementation, such as a lack of standardized protocols, insufficient professional training, and institutional resistance.

Table 2. Summary of studies included in the integrative review (2018–2024), Teresina, Piauí.

Author (year) — Country	Study type	Objective (summary)	Type of PICS	Population (summary)	Outcomes assessed	Main results	Level of evidence (Melnyk & Fineout-Overholt)
Chlan et al., 2013 — USA10	Multicenter randomized clinical trial	To assess whether patient-directed music (PDM) reduces anxiety and sedative use in patients on mechanical ventilation.	Music therapy (PDM) with personalized selection by the music therapist	373 mechanically ventilated patients in 12 ICUs	Anxiety (VAS-A), intensity/frequency of sedatives, duration of ventilation	PDM significantly reduced anxiety and reduced the intensity/frequency of sedatives compared to usual care; clinically relevant effect (progressive reduction by the 5th day).	Level II — RCT
Lee et al., 2017 — Taiwan11	Randomized clinical trial	Comparison of music, aromatherapy, and a control group in mechanically ventilated patients regarding physiological and self-reported anxiety	Recorded music of the patient's choice; aromatherapy (lavender massage)	132 ICU patients undergoing ventilation	Anxiety (C-S-TAI, VAS-A), HR, BP, RR	Both music and aromatherapy reduced anxiety and physiological signs compared to control; music showed a greater effect than aromatherapy.	Level II — RCT
Karimzadeh et al., 2021 — Iran12	Randomized, placebo-controlled clinical trial	To evaluate the effect of aromatherapy (lavender and Citrus aurantium) on anxiety and agitation- s in conscious ICU patients	Inhalation of essential oil (lavender or Citrus aurantium) vs. placebo (saline)	150 conscious patients in ICUs	Anxiety (STAI-state), agitation (RASS)	Lavender and Citrus aurantium reduced anxiety immediately and up to 3 hours post-intervention vs. placebo; a significant reduction in agitation was observed, with no statistical difference between the aromas.	Level II — RCT
Cho, Lee & Hur, 2017 — South Korea13	Non-randomized controlled study (clinical trial)	To investigate the effect of aromatherapy on stress reduction and improvement in sleep quality in ICU patients	Lavender inhalation (2-day protocol)	64 patients in intermediate care unit/ICU	Perceived stress, sleep quality	Aromatherapy was associated with reduced stress and improved sleep quality after 2 days; the non-randomized design limits causality.	Level III — Controlled study without randomization

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Kakar et al., 2023 — Netherlands (multicenter)14	Multicenter randomized clinical trial	To evaluate the effect of a music intervention (two sessions/day for 3 days) on anxiety in conscious critically ill patients	Structured music intervention (daily sessions preferred)	94 patients (primary analysis) who were hemodynamically stable, RASS ≥ −2	Anxiety (VAS-A, STAI-6), sleep, delirium, use of opioids/ benzodiazepines	No significant reduction in anxiety was observed (population with low baseline anxiety levels); there was a reduction in opioid use and heterogeneous secondary findings—reinforcing the importance of context, duration, and music selection.	Level II — RCT
Ettenberger et al., 2024 — Colombia (pilot RCT)15	Pilot randomized clinical trial (3 arms)	To test the effects of music-assisted relaxation and patient-preferred therapeutic music in mechanically ventilated patients with	Music therapy (bedside sessions by a music therapist; 2 modalities)	23 MV patients (final analysis) in the ICU	Anxiety (STAI-6), pain (VAS), RASS, vital signs, days on mechanical ventilation	Pilot study showed no significant difference in anxiety/pain; good acceptability and safety; significant difference in days of ventilation (requires confirmation in a larger sample).	Level II — pilot RCT
Pattison et al., 2024 — United Kingdom (feasibility RCT)16	Randomized feasibility trial	Feasibility and potential effects of aromatherapy massage on sleep in critically ill patients	Aromatherapy oil massage (short protocol)	34 randomized critically ill patients (feasibility analysis)	Sleep parameters (BIS), RCSQ, feasibility indicators	The study validated the procedures, but the sample size was too small to demonstrate clinical efficacy; it suggests the need for larger studies and logistical adaptations.	Level II — feasibility study (RCT)
Widiastuti, 2023 — Indonesia17	Experimental/ quasi-experimental study	To evaluate the effect of music therapy on reducing distressing symptoms in critically ill patients	Receptive music therapy (recordings)	Critically ill patients (limited sample size; on-site study)	Symptoms: discomfort, anxiety, pain	Reports symptomatic reduction (anxiety, discomfort); variable methodological quality — contributes as supplementary evidence.	Level III–IV (non-robust experimental studies)

Source: Authors, 2025.

* Classification of levels of evidence according to Melnyk and Fineout-Overholt (2011).

DISCUSSION

The results of the identified original studies[10–17] indicate that PICS, especially music therapy and aromatherapy, may play a promising complementary role in promoting patient safety in the ICU.

Patient-directed music, as a strategy applied in the study by Chlan *et al*. (2013)[10], resulted in a significant reduction in anxiety and a decrease in sedative use among patients on mechanical ventilation, demonstrating a physiological and practical impact on sedation routines. This finding aligns with the overall picture emerging from the literature reviews, in which music therapy emerges as the most frequently used practice with the strongest evidence of benefit in intensive care settings[18,19] .

In comparative studies such as that by Lee *et al*. (2017)[11] , music and aromatherapy were tested against a control group, with both being effective in reducing anxiety and vital signs (e.g., heart rate, blood pressure), though music showed a more pronounced effect. This similarity reinforces that multiple modalities of PICS can yield benefits when properly protocolized. At the same time, the systematic literature highlights the heterogeneity of interventions (objectivity of music selection, duration, frequency) as a limiting factor for direct comparisons and meta-analyses[18] .

The study by Karimzadeh *et al*. (2021)[12] , employing aromatherapy with lavender and *Citrus aurantium*, showed an immediate reduction in anxiety and a slight reduction in agitation in conscious ICU patients compared to placebo, which supports the applicability of olfactory interventions in critical care settings. This evidence aligns with other studies in intensive care units and units providing mild ventilatory support, although it was not directly conducted in invasive ICUs (Cho *et al*., 2017)[13] .

More recent studies, such as the multicenter, randomized trial by Kakar *et al*. (2023)[14] , demonstrated robust acceptability of the music intervention; however, no statistically significant reduction in anxiety was observed in the total cohort. This discrepancy highlights the need for attention to sample selection (e.g., baseline anxiety levels), the sensitivity of the scales used, and consistency in the application of interventions. This variation had already been identified in systematic reviews as an inherent

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limitation of studies on complementary therapies[20] .

In pilot/feasibility studies, such as those by Ettenberger *et al*. (2024)[15] and Pattison *et al*. (2024)[16] , the interventions were well tolerated and did not cause adverse events, with suggestions of improvement in sleep parameters or comfort in some subgroups. However, the small sample sizes and short duration imply that the observed positive effects should be interpreted with caution and validated in larger trials. The study by Widiastuti (2023)[17], although less methodologically robust, reinforces the potential of music therapy to alleviate symptoms of discomfort and anxiety in critically ill patients, broadening the repertoire of cultural contexts.

These converging findings suggest that PICS, particularly interventions based on music and aromas, have the potential to integrate humanized care practices in ICUs, creating environments less prone to the adverse effects of excessive sedation, stress, and sleep deprivation. However, these interventions should be viewed as complementary to conventional management, not as substitutes.

Study Limitations

Several limitations impact the robustness of the evidence found in the analyzed studies. First, many trials, such as those conducted by Ettenberger and Pattison, had small sample sizes and a pilot study design, which limits the statistical power and generalizability of the results.

In addition, significant methodological heterogeneity was observed: interventions varied regarding the type of music used (standardized playlist or patient-preferred music), duration and frequency of sessions, method of aromatherapy application (inhalation versus massage), and measurement instruments employed, such as different anxiety scales and sleep questionnaires.

Another critical point concerns the scarcity of explicit safety outcomes, as few studies directly assessed variables such as ventilation time, occurrence of delirium, adverse events related to sedative use, mortality, or cost-effectiveness. Furthermore, in many studies, the risk of bias and the lack of blinding of patients and evaluators represented potential limitations, which may have influenced subjective responses. Finally, most studies were conducted in highly controlled settings, particularly in developed countries , which limits the applicability of the findings to ICUs in resource-limited settings, requiring caution when extrapolating the results.

Recommendations and Implications for Practice and Research

Given these limitations, some practical recommendations and implications for research are pertinent. The adoption of standardized PICS protocols for ICUs is recommended, with a clear definition of the type of intervention (music, aromatherapy, massage), duration, frequency, and exclusion criteria, such as allergies or hemodynamic instability. Furthermore, it is essential to develop multicenter, randomized, controlled trials with an adequate number of participants and outcomes related to patient safety and clinical effectiveness.

A cost-effectiveness evaluation of the interventions is also necessary to inform hospital administrators and justify resource allocation. Concurrently, it is important to invest in training healthcare professionals, including nurses, physical therapists, and physicians, not only in the techniques but also in raising awareness to incorporate PICS into daily ICU care. Continuous safety monitoring and systematic recording of adverse reactions, such as allergic responses to scents, should also be included when introducing new practices. Finally, it is recommended that implementation studies be conducted to identify institutional barriers, assess staff acceptance, and integrate PICS into sedation and intensive care protocols, thereby promoting safe and humanized care.

FINAL CONSIDERATIONS

In summary, this review reveals that PICS, especially music therapy and aromatherapy, offer consistent evidence of benefit regarding anxiety, sleep, and sedative use in the ICU setting. These interventions, when properly integrated and standardized, have the potential to positively contribute to patient safety by reducing risks associated with excessive sedation and improving the comfort of critically ill patients. Nevertheless, the results should be interpreted with caution: methodological limitations and the absence of clinical safety outcomes in many studies indicate the need for further research. It is hoped that future multicenter studies, with standardized protocols and robust outcomes, will consolidate the role of PICS as a structural component of safe and humanized intensive care.

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