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Intensive care

Soins intensifs

1. Systematic Reviews and Meta-Analysis

1.1. Generic Acupuncture

1.1.1. Formenti 2022

Formenti P, Piuri G, Bisatti R, Pinciroli R, Umbrello M. Role of acupuncture in critically ill patients: A systematic review. J Tradit Complement Med. 2023;13(1):62-71.
https://doi.org/10.1016/j.jtcme.2022.10.005

Background	Acupuncture is part of a complex medical approach used in China for about 2000 years, known as Traditional Chinese Medicine, whose central assumption is that health occurs when the patterned energy flow throughout the body is balanced. Within this paradigm, acute illness occurs when a major state of imbalance or disruption arises, and the use of acupuncture may help in correcting these imbalances. While the Chinese hospital system often offers the integration of traditional and western medicine, in Europe and the United States this combined approach is infrequently practiced.
Objective	Several investigations have consistently shown the effectiveness of acupuncture for different aspects of critical illness. The aim of this systematic review is to increase the clinician's awareness of the current evidence regarding the use of acupuncture for the management of critically ill patients, both alone or as a complement to western medicine.
Methods	The effects of acupuncture on critical illness, with a particular focus on respiratory function, pain and delirium treatment and prevention, circulatory function, nutritional support, and recovery after acute illness are explored and summarized.
Results	Evidence is provided that acupuncture is an acceptable and feasible option for the management of several aspects of critical illness.
Conclusion	In addition, we suggest a practical selection of potentially useful acupuncture points in the critical care setting, with indications for simple localization and the correct puncture method.

1.2. Special outcome

1.2.1. Mechanical ventilation

1.2.1.1. Ben-Arie 2024

Ben-Arie E, Mayer PK, Lottering BJ, Ho WC, Lee YC, Kao PY. Acupuncture reduces mechanical ventilation time in critically ill patients: A systematic review and meta-analysis of randomized control

trials. Explore (NY). 2024 Jul-Aug;20(4):477-492. https://doi.org/10.1016/j.explore.2023.11.007

Backgound	Mechanical Ventilation (MV) is an essential life support machine, frequently utilized in an Intensive Care Unit (ICU). Recently, a growing number of clinical trials have investigated the effect of acupuncture treatment on MV outcomes.
Objectives	This study investigated the safety and efficacy of acupuncture treatment for critically ill patients under MV.
Methods	In this systematic review and meta-analysis of randomized controlled trials, the efficacy of acupuncture related interventions was compared to routine ICU treatments, and sham/control acupuncture as control interventions applied to ICU patients undergoing MV. The databases of PubMed, Cochrane Library, and Web of Science were extensively searched in the month of April 2022. The primary outcome measurements were defined as total MV time, ICU length of stay, and mortality. The Cochrane Collaboration risk of bias tool was employed to analyze the severity of bias. The meta-analysis was conducted using Review Manager 5.3 software. The quality of evidence was evaluated according to the GRADE approach.
Results	A total of **10 clinical trials** were included in this investigation. When comparing the performance of acupuncture-related interventions to that of the reported control interventions, the results of the meta-analysis revealed a significant reduction in the total number of MV days as well as the duration of ICU length of stay following acupuncture treatment (MD -2.06 [-3.33, -0.79] P = 0.001, I2 = 55 %, MD-1.26 [-2.00, -0.53] P = 0.0008, I2 = 77 %, respectively). A reduction in the total mortality was similarly observed (RR = 0.67 [0.47, 0.94] P = 0.02, I2 = 0 %).
Conclusion	This systematic review and meta-analysis identified a noteworthy reduction in the total MV days, time spent in the ICU, as well as the total mortality following acupuncture related interventions. However, the small sample size, risk of bias and existing heterogeneity should be taken into consideration. The results of this study are promising and further investigations in this field are warranted.

1.2.1.2. Jiang 2024

Jiang M, Wang B, Liu M, Zhang H, Li J. Effect of Transcutaneous Electrical Acupoint Stimulation on Extubation-Related Stress Response in Noncardiac Surgery Patients: A Systematic Review and Meta-Analysis of Randomized Controlled Trials. J Perianesth Nurs. 2024 Dec;39(6):990-998. https://doi.org/10.1016/j.jopan.2024.01.015

Background	Stress response is a common complication during extubation, mainly manifested by dramatic hemodynamic fluctuations. Transcutaneous electrical acupoint stimulation (TEAS) is widely applied in the perioperative period.
Objective	We performed this meta-analysis to evaluate whether the TEAS could relieve the stress response during extubation in noncardiac surgery patients.
Methods	A systematic review and meta-analysis of randomized controlled trials. We searched six databases (PubMed, Web of Science, Embase, Cochrane Library, China National Knowledge Infrastructure, CNKI, and Wan Fang) for relevant literature. A risk of bias assessment was executed based on the Cochrane Criteria. We applied RevMan5.4.1 software to analyze data. When the $\chi 2$ test did not show heterogeneity, we adopted the fixed-effect model. Otherwise, the random-effect model was used.

Results	In total, 12 randomized controlled trials with 1,347 participants were enrolled in this meta-analysis. Meta-analysis showed the heart rate and mean arterial pressure of the intervention group were significantly lower than the control group at immediately, 5 minutes, and 10 minutes after extubation. The occurrence rate of emergency agitation (RR 0.39, 95% CI [0.26,0.60]) and postoperative delirium (RR 0.40, 95% CI [0.22, 0.72]) were also lower in the TEAS group. The consumption of propofol (standardized mean difference (SMD) 0.47, 95% CI [-0.77, -0.18]) and remifentanil (SMD 1.49, 95% CI [-2.01, -0.96]) of the intervention group were also significantly reduced compared with the control group.
Conclusion	TEAS was beneficial for improving stress response during extubation, emergence agitation, postoperative delirium, and reduced the consumption of intraoperative propofol and remifentanil, but it was necessary to note the limitations of the current evidence.

1.2.1.3. Li 2024

Li Y, Li X, Zhang J, Xu S, Gao L, Meng X, Chen X. [Effect of different intervention measures on duration of mechanical ventilation and the length of ICU stay in critically ill patients: a network Meta-analysis]. Zhonghua Wei Zhong Bing Ji Jiu Yi Xue. 2024 Aug;36(8):860-866. https://doi.org/10.3760/cma.j.cn121430-20231211-01074

Objective	To evaluate the effects of different intervention measures on the duration of mechanical ventilation and the length of intensive care unit stay in critically ill patients using a network meta-analysis.
Methods	Randomized controlled trials assessing different intervention measures on mechanical ventilation duration and ICU length of stay were systematically searched in PubMed, Embase, China Biomedical Literature Database, CNKI, and other databases from inception to November 2023. Literature screening, quality assessment, and data extraction were independently conducted by two researchers. Network meta-analysis was used to compare interventions, and funnel plots were generated to assess publication bias.
Results	Thirty-seven RCTs involving 3 977 critically ill patients were included (2 041 intervention, 1 936 control). Thirteen interventions were analyzed: usual care, early activity, early comprehensive rehabilitation, early pulmonary rehabilitation, cluster intervention strategy, sedation–analgesia–cluster nursing, music therapy, neuromuscular electrical stimulation, modified education and visitation, virtual reality, auricular point sticking, **acupoint acupuncture**, and concerted intervention. Modified education and visitation significantly reduced mechanical ventilation duration compared with concerted intervention, early pulmonary rehabilitation, and usual care. Concerted intervention significantly shortened ICU length of stay compared with usual care. SUCRA rankings showed the highest probabilities for reducing ventilation duration with modified education and visitation and early activity, followed by acupoint acupuncture. For ICU length of stay, concerted intervention ranked highest, followed by auricular point sticking and modified education and visitation. Publication bias for ICU stay outcomes appeared low.
Conclusions	Modified education and visitation and concerted intervention appear effective in reducing mechanical ventilation duration and ICU length of stay in critically ill patients. However, due to limitations in the number and quality of included studies, these findings require confirmation through further high-quality research.

1.2.2. Enteral nutrition intolerance

1.2.2.1. Yang 2025

Yang N, Xu Y, Zhou X, Guo S, Deng H, Sun J, Liu Y, Shao M, Ma Y. Effectiveness of non-pharmacological interventions to prevent enteral nutrition intolerance in ICU patients: A network meta-analysis. Nurs Crit Care. 2025 Sep;30(5):e13226. https://doi.org/10.1111/nicc.13226

Background	Enteral nutrition is beneficial for improving the clinical outcomes of intensive care unit patients. However, enteral nutrition intolerance is a common complication in intensive care unit patients undergoing enteral nutrition.
Aim	We aimed to assess the effectiveness of non-pharmacological interventions in preventing enteral nutrition intolerance in intensive care unit patients and to identify the optimal non-pharmacological interventions.
Methods	Seven databases were searched to obtain randomized controlled trials involving non-pharmacological interventions to prevent enteral nutrition intolerance in intensive care unit patients. Network meta-analysis was performed using Stata18.0 software, and the integrated data were investigated with odds ratio (OR) and 95% confidence interval (95% CI).
Results	A total of 16 randomized controlled trials involving 10 non-pharmacological interventions and 1765 intensive care unit patients were included. Compared with routine enteral nutrition care, network meta-analysis showed that bundled care [OR = 0.93, 95% CI (0.32-1.53)] (p = .003), intra-abdominal pressure monitoring [OR = 1.68, 95%CI (1.19-2.16)] (p < .001), **acupuncture** [OR = 2.69, 95%CI (1.64-3.73)] (p < .001), pectin-added intermittent enteral nutrition [OR = 1.13, 95%CI (0.48-1.77)] (p = .001), multidisciplinary nutritional treatment model [OR = 1.98, 95%CI (0.87-3.10)] (p < .001), abdominal massage [OR = 2.42, 95%CI (1.50-3.34)] (p < .001) and intermittent feeding with semisolid nutrients [OR = 2.08, 95%CI (0.19-3.97)] (p = .031) were effective in preventing enteral nutrition intolerance in intensive care unit patients. The ranking probabilities of the interventions indicated that acupuncture (89.4%) was the optimal non-pharmacological intervention for preventing enteral nutrition intolerance in intensive care unit patients, followed by abdominal massage (83.4%).
Conclusions	**Acupuncture** and abdominal massage are recommended to prevent enteral nutrition intolerance in intensive care unit patients. Moreover, more high-quality trials are needed to investigate the reliability of evidence levels for different non-pharmacological interventions.
Relevance to clinical practice	This study provided evidence for intensive care nurses that **acupuncture is the optimal intervention to improve enteral nutrition intolerance** in intensive care unit patients among the 10 interventions. However, unique clinical circumstances should be considered. Therefore, we recommend that intensive care nurses also use abdominal massage when acupuncture is not available.

2. Clinical Practice Guidelines

⊕ positive recommendation (regardless of the level of evidence reported)
Ø negative recommendation (or lack of evidence)

2.1. Chinese expert consensus 2026 ⊕

Li J, Jing M, Zhao H, Xing H, Hu Y, Jin H, Zhao Y, Liu M, Mao M, Fang R, Ma M, Li L. Summarising the Best Evidence for Non-Pharmacological Prevention of **Delirium in Mechanically Ventilated ICU** Patients. Nurs Crit Care. 2026 Mar;31(2):e70354. https://doi.org/10.1111/nicc.70354

Acupuncture is recommended to precisely regulate the flow of meridians and qi and blood by stimulating specific acupoints. LI4 (Hegu), located at the midpoint between the first and second metacarpal bones on the dorsum of the hand, should be needled to a depth of 0.5–1 cm. LR3 (Taichong), located at the depression on the dorsum of the foot distal to the junction of the first and second metatarsal bones, should be needled vertically to a depth of 0.5–1.5 cm [32]. *Level of evidence*: 1a ; *Grade of recommendation*: A.

Reference cited:

1. Formenti P, Piuri G, Bisatti R, Pinciroli R, Umbrello M. Role of acupuncture in critically ill patients: A systematic review. J Tradit Complement Med. 2022 Oct 31;13(1):62-71. https://doi.org/10.1016/j.jtcme.2022.10.005

2.2. Society of Critical Care Medicine's (SCCM, USA) 2025 Ø

Lewis K, Balas MC, Stollings JL, McNett M, Girard TD, Chanques G, Kho ME, Pandharipande PP, Weinhouse GL, Brummel NE, Chlan LL, Cordoza M, Duby JJ, Gélinas C, Hall-Melnychuk EL, Krupp A, Louzon PR, Tate JA, Young B, Jennings R, Hines A, Ross C, Carayannopoulos KL, Aldrich JM. A Focused Update to the Clinical Practice Guidelines for the Prevention and Management of Pain, Anxiety, Agitation/Sedation, Delirium, Immobility, and Sleep Disruption in Adult Patients in the ICU. Crit Care Med. 2025 Feb 21. https://doi.org/10.1097/CCM.0000000000006574

We suggest not using aromatherapy, **acupressure**, or music at night to improve sleep in critically ill adults. [aromatherapy and acupressure] (Conditional, Low) [music] (Conditional, Very Low)

2.3. China Association of Rehabilitation Medicine 2023 ⊕

Respiratory Equipment Committee of China Association of Medical Equipment; Young and Middle-aged Pulmonary Rehabilitation Committee of Pulmonary Rehabilitation Committee of China Association of Rehabilitation of Disabled Persons; Critical Illness Rehabilitation Group of China Association of Rehabilitation Medicine. Recommendations for the management and rehabilitation of patients with a tracheostomy. Zhonghua Jie He He Hu Xi Za Zhi. 2023 Oct 12;46(10):965-976. https://doi.org/10.3760/cma.j.cn112147-20230331-00153

In addition, the most important topic was elaborated, namely the methods used to promote the rehabilitation and decannulation of patients with a tracheostomy, including respiratory and other skeletal muscle training, dysphagia and verbal communication intervention, ventilation support, chest physiotherapy, and specifically the traditional Chinese medical therapies that were excellent in this area, such as **acupuncture, moxibustion**, and herbal medicine

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