



# Effects of Mouthwash Matrica and Chlorhexidine in Preventing Nosocomial Pneumonia in the Intensive Care Unit: A Systematic Review

Zahra Abdoli Aliabadi<sup>1</sup>, Hosein Soleimani Nasrabadi<sup>1</sup>,  
Ebrahim Sabari Fard<sup>1</sup>, Maryam Dabiri Fard<sup>2\*</sup>

<sup>1</sup>Nursing Research Committee, Islamic Azad University, Kashan Branch, Kashan, Iran

<sup>2</sup>Department of Nursing, Kashan Branch, Islamic Azad University, Kashan, Iran

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### \*Corresponding Author:

Dept. of Nursing, Kashan  
Branch, Islamic Azad  
University, Kashan, Iran

## ABSTRACT

**Introduction:** Hospital-acquired pneumonia is one of the most common causes of infection, ranking second in mortality in the intensive care unit (ICU). This disease arises from reduced mucus production, immobility of the tongue, aspiration of oropharyngeal organisms, and inhalation of bacteria. Matrica herbal mouthwash, made from chamomile, is used for skin and oral diseases. Chlorhexidine is the most commonly used mouthwash in specialized units, where it serves to prevent decay, control gum inflammation, and reduce microbial plaque. The aim of this study was to compare the effects of these two mouthwashes in preventing hospital-acquired pneumonia in specialized units.

**Search Strategy:** The study employed a systematic review method, searching for keywords such as "chlorhexidine", "Matrica", "nosocomial pneumonia", "prevention", and "intensive care units", along with their English equivalents, in the PubMed, Google Scholar, Scopus, and ScienceDirect databases for the period from 2017 to March 1, 2024. After removing duplicate and irrelevant articles, a total of 19 English and Persian articles were analyzed and assessed for quality using the PRISMA 2020 checklist.

**Results:** Studies comparing the effectiveness of chlorhexidine mouthwash with Matrica in preventing pneumonia have shown no significant difference between these two mouthwashes in terms of pneumonia prevention. Although Matrica mouthwash was effective in reducing bacterial colonization, chlorhexidine showed a greater antibacterial effect on common bacteria associated with acquired pneumonia, such as *Streptococcus pneumoniae* and *Staphylococcus aureus*. Additionally, the halo diameter of inhibition created by chlorhexidine mouthwash on common oral bacteria was greater than that of Matrica extract, indicating a lack of growth for these bacteria. It is important to note that for effective prevention in high-risk patients, the areas of the mouth, including the gums, teeth, tongue, and dentures should be rinsed three times a day for 6 to 10 minutes.

**Conclusion and Discussion:** Chlorhexidine mouthwash has a greater effect on inhibiting growth and reducing colonization of common oral bacteria. However, in addition to chlorhexidine mouthwash, Matrica herbal mouthwash can also be used as an effective, side-effect-free, and cost-effective method for preventing respiratory infections in high-risk hospitalized patients in the ICU.

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