

PICO Question

“Does daily oral care decrease the prevalence of hospital-acquired pneumonia in immobile patients, compared to immobile patients without the use of this daily practice, during the course of their hospital stay?”

Population: Immobile patients

Intervention: Daily oral care

Comparison: Lack of daily oral care

Outcome: Decreased prevalence of hospital-acquired pneumonia or pneumonia-promoting conditions

Time Frame: Duration of health care visit



Background & Significance

Hospital-acquired infections (HAI) are an avoidable morbidity faced by vulnerable groups such as those who cannot ventilate efficiently or are reliant on hospital staff to perform their activities of daily living

- **Hospital-acquired pneumonia (HAP):** diagnosed or occurs 48 hours after hospital admission (Shebl et al., 2023)
- **Ventilator-Associated Events (VAE):** An infection that enters a patient's ventilator tube and causes pneumonia or bacterial infections (CDC, 2022)
 - Prevalence: increased in incidence by 12% between 2020 and 2021 in ICU settings (CDC, 2022), and affects up to 40% of patients receiving invasive mechanical ventilation for more than 2 days (Papazian et al., 2020)
 - Population: Patients in long term care facilities are 3-8 times more likely to be infected with group A Streptococcal (GAS) bacteria and 1.5 times more likely to die from these infections (CDC, 2023)
 - Significance: financial burden on hospitals from prolonged hospital stays (up to \$40,144 Papazian et al., 2020).

A potential, inexpensive solution to decreasing HAP is reinforcing **oral hygiene** in patients' daily care. Types of oral care can range from brushing teeth, using a chlorhexidine rinse/wash, suctioning, or even mouth swabs...

- “Dental biofilm (plaque) has been shown to be a reservoir and a viable environment for respiratory pathogens to flourish and populate” (Hong et al., 2017).
- High quality evidence → evidence based practice → hospital standards

Methods

Search Strategy: Articles gathered through the Health Sciences and Human Services Library's (HSHSL) OneSearch

Search Limiters: English, full text, peer-reviewed articles, 2017-present

Key Words / Phrases

- “Oral care AND pneumonia” yields 1,241 results
- “Oral care AND immobility” yields 2 results
- “Oral care AND ventilator associated pneumonia” has 538 results
- “Hospital acquired pneumonia AND oral care” created 144 results

“Immobile OR immobility OR immobile patients OR ventilated patients” was used along with, “VAP OR Ventilator acquired pneumonia OR pneumonia” and “oral care OR oral hygiene OR mouth care.”

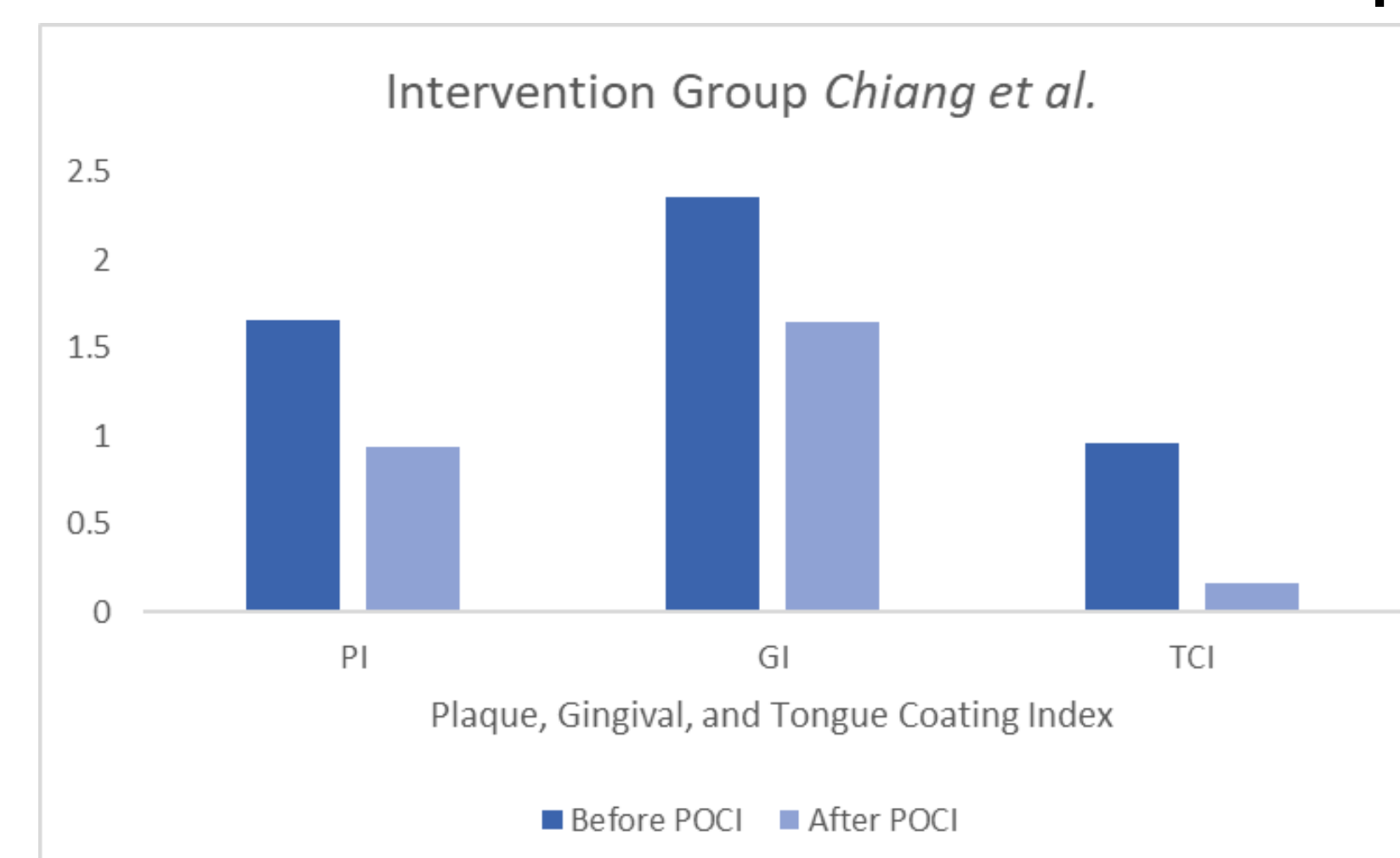


Literature Review

Article	Findings	Strength & Quality
Oral Care and Nursing Home Residents studied by <i>Chiang et al.</i>	<ul style="list-style-type: none"> • Decreases in PI, GI, TCI, and bacterial spread post intervention • Intervention group had shorter hospital stays • Oral care slowed speed at which bacterial concentrations grew 	<ul style="list-style-type: none"> • Quasi-experimental study • Strong mix of quantitative and qualitative data • Small sample size is not generalizable • Data are statistically significant • Overall ranked a 2B
Oral Care and Ventilated ICU Patients from <i>Karimi et al.</i>	<ul style="list-style-type: none"> • VAP significantly reduced with intervention compared to standard procedures • Patients with lower levels of consciousness (low GCS scores) more likely to acquire VAP 	<ul style="list-style-type: none"> • Double blind randomized controlled trial (RCT) decreases risk of bias • Large sample size & statistically significant findings • Detailed oral care regimen outlined • Ranked 1B
Use of CHX on Ventilated ICU Patients from <i>Kes et al.</i>	<ul style="list-style-type: none"> • By day 3 of intervention, oral bacteria significantly decreased • BOAG value had larger decreases in intervention group than control • CHX slowed rate of VAP development 	<ul style="list-style-type: none"> • Prospective single blinded randomized controlled trial • Heavy inclusion/exclusion criteria makes it hard to generalize findings • Standardized oral assessment tool • Given score of 1B as well
Oral Care and Intubated Patients studied by <i>Shen et al.</i>	<ul style="list-style-type: none"> • Bacterial flora significantly decreased with revised oral care • Those in intervention group had better oral cleanliness scores • VAP incidence significantly reduced in intervention group 	<ul style="list-style-type: none"> • Randomized observational study • Various quantitative data gathered • Sample size and inclusion/exclusion criteria may not yield generalizable findings • Ranked 2B

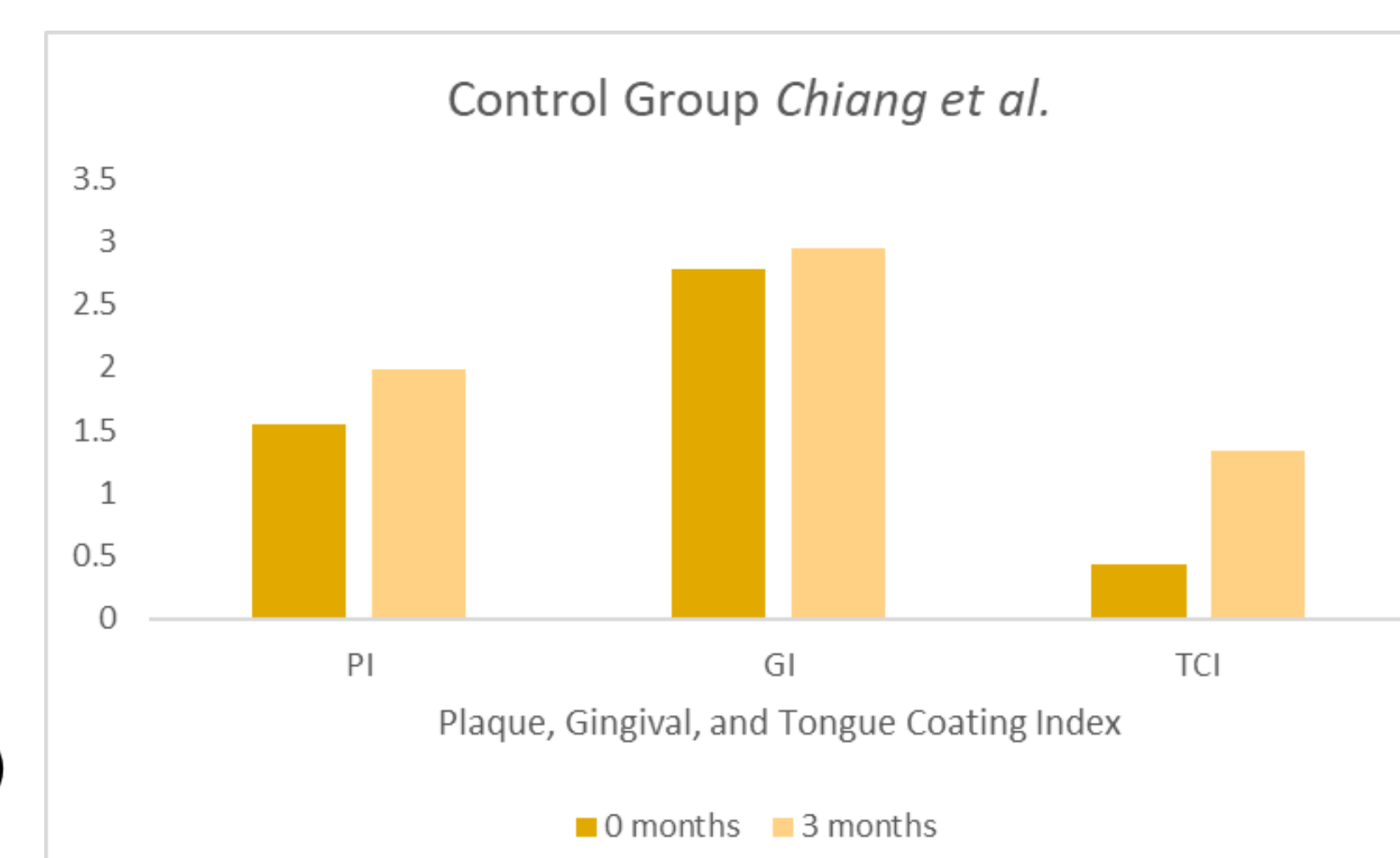
Results

Oral Health Status indicators of patients in the Chiang et al. study



PI (1.66 ± 0.78 vs. 0.94 ± 0.64, $p < 0.01$), GI (2.36 ± 0.76 vs. 1.65 ± 0.83, $p < 0.01$), and TCI (0.96 ± 1.10 vs. 0.16 ± 0.47, $p < 0.01$)

This data set shows the impact of a daily, intensive oral care protocol on patients in the *Chiang et al.* study.



PI (1.54 ± 0.67 vs. 1.99 ± 0.52, $p 0.03$) GI (2.78 ± 0.44 vs. 2.94 ± 0.17, $p 0.50$) and TCI (0.44 ± 0.96 vs. 1.13 ± 0.72, $p 0.02$)

When compared to the participants of the control group, it was discovered that outcomes were poor in those not receiving oral care

Synthesis

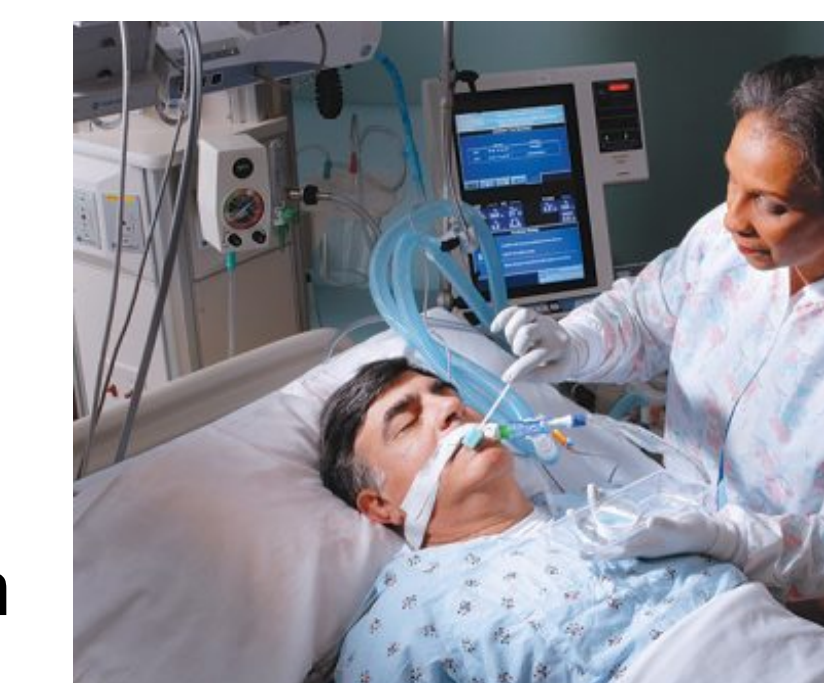
Consensus of Research:

Intensive oral care protocol > Standard hospital oral care protocol > No oral care protocol

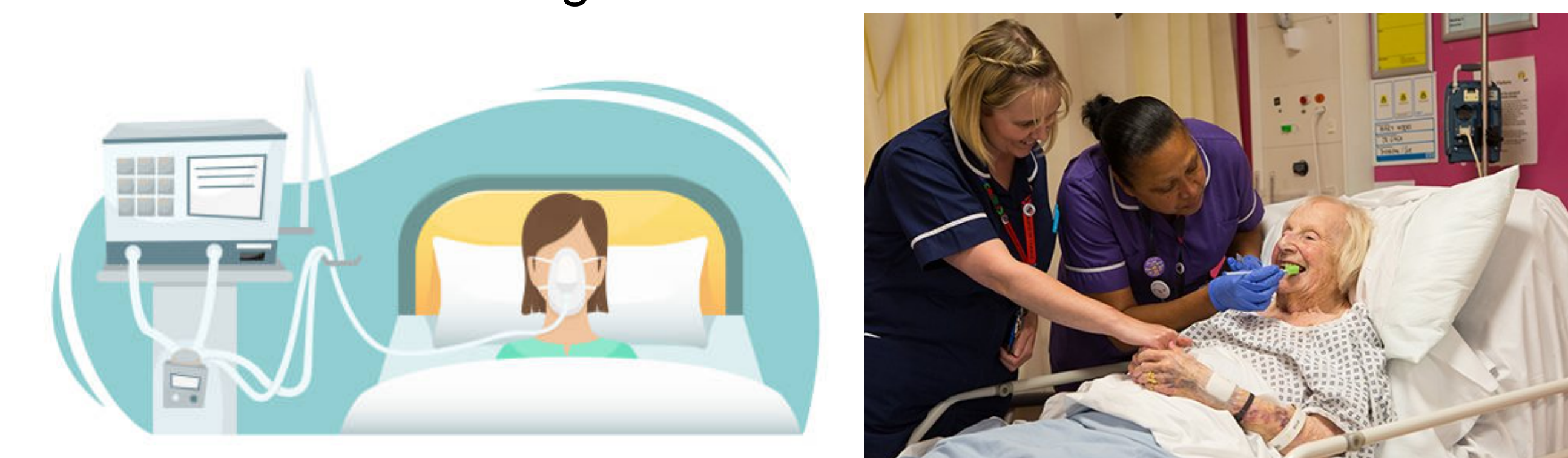
Benefits: Improve oral health status, Reduce hospital stays, Decrease the chances of acquiring pneumonia, Lower bacterial concentration.

Barriers: lack of priority, education, fear of harm, equipment, time, effort, etc. (Hammond et al., 2023).

Evidence Quality: range of quality/strength from 1B to 3C, some with statistically significant findings



Overall, research recommends the need for a more intensive approach to oral care in both acute and long term care facilities. Immobilized patients benefit both emotionally and physically from modifications to the standard oral care protocol. Any form of oral care provided is better than none. Oral care significantly reduces the risk of HAP and the burden associated with the infection's progression. Intensive oral care protocols have been seen to improve the quality and safety of care delivered to immobile patients in various health care settings.



Implications for Nursing Practice

- Educate family/patient on importance of oral care
- Quality Improvement → increased involvement from healthcare providers, improves care delivery, reduces incidences of HAP, increase the availability of resources, and have physical effect on the patients.
- More RCTs will determine the most effective oral care technique in preventing HAP and lead to improvement and incorporation of oral healthcare protocols on hospital units.
- Prioritization of purchasing more oral care supplies → increase access

Future Studies are Needed:

- To increase nurse interests in oral care and educational provisions that are effective in ensuring nurses make oral care a priority (Koike, 2023)
- Investigate the lack of and inconsistencies of oral care protocols in acute care settings; nurses knowledge, attitudes and practices (Tsui, 2023)

References

