TITLE: Oral Care Sponges for Long-Term Care Patients: A Review of the Clinical-Effectiveness

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CONTEXT AND POLICY ISSUES:

Oral care sponges (toothettes) are foam swabs used to maintain oral hygiene in hospital and long-term care patients. These swabs are indicated for use in patients who cannot tolerate brushing with a regular toothbrush. This includes the elderly, those at an excessive risk for bleeding in the mouth, patients undergoing cancer treatment, and patients who are intubated. Concern has been expressed over the safety of oral care sponges, leading to the need to examine the clinical benefit and harm of the use of these devices in the long-term care population.

RESEARCH QUESTION:

What is the clinical benefit and harm of using oral care sponges (toothettes) for long-term care patients?

METHODS:

Focused literature searches were conducted on key health technology assessment resources, including PubMed, The Cochrane Library (Issue 2, 2009), University of York Centre for Reviews and Dissemination (CRD) databases, ECRI, EuroScan, international health technology agencies, and a focused Internet search. The searches were limited to English language articles published between 1999 and July, 2009. To facilitate screening of articles, two searches were undertaken whereby one search included a long term care patient population without study design filters. The second search did not include a specific patient population other than all adults. However, filters were applied to the latter search to limit the retrieval to health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, and controlled clinical trials. Additional articles were retrieved from hand searching.
HTIS reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented first. These are followed by randomized controlled trials, controlled clinical trials, and observational studies.

**SUMMARY OF FINDINGS:**

No health technology assessments, systematic reviews, randomized controlled trials, controlled clinical trials, or observational studies were identified examining the effectiveness of oral care sponges in the long-term care population. Two guidelines on oral health care\(^3\)\(^4\) and one controlled clinical trial that compared oral care sponges to toothbrushes in a general population were identified.\(^5\) A narrative review that discussed foam swabs for oral care has been included in the appendix.\(^6\)

**Controlled clinical trials**

A controlled clinical trial published in 2002 examined the effectiveness of foam swabs to remove dental plaque compared to a toothbrush.\(^5\) The study was conducted in a general population, and the authors suggested that the results would be generalizable to a wider population. There were 34 participants involved in the study (age range not reported), and each participant used both a toothbrush and the foam swab. Participants were instructed to first use the toothbrush, followed by the foam swab, or vice versa. A plaque scoring system was used to quantify plaque on the upper and lower four teeth on either side of the mid-line. A plaque score of 0 indicated the absence of plaque, a score of 1 indicated there were “flecks of plaque” to a distinct band < 1mm wide, and a score of 2 indicated 1mm of plaque or more. Plaque measurements were taken at baseline, following brushing with the first intervention, and again following brushing with the second intervention. Group A had their baseline plaque measured, brushed with a toothbrush and were scored for plaque, then used the foam swab and were scored again for plaque. One week later, Group A used the foam swab first after their baseline plaque was scored, followed by the toothbrush. Group B used the foam swab first on week 1, and the toothbrush first on week 2. The group that used the toothbrush first had a mean baseline plaque score of 1.27, and the score following brushing was 0.33 (p value not reported). The plaque scores of the group who used the foam swab first were 1.31 at baseline and 1.15 after using the foam swab (p value not reported). Approximal and crevice sites were 77% and 44% cleaner, respectively, after using a toothbrush compared to using a foam swab (\(P = 0.001\) for both sites). The authors of this study concluded that toothbrushing was more effective than using a foam swab for removal of dental plaque.

**Guidelines**

Oral hygiene guidelines for healthcare workers who work with adult patients were published in 2004 from the Singapore Ministry of Health.\(^4\) A systematic literature search was conducted and studies included were appraised by the working group using the Scottish Intercollegiate Guidelines Network (SIGN) checklist. No information about criteria for study inclusion or exclusion was reported, although levels of evidence used to assess the studies included all study types. The recommended first line method for oral hygiene was toothbrushing, as long as the patient is not subject to bleeding, pain, or aspiration (Grade C; type of evidence = 2++: evidence from “high quality systematic reviews of case-control or cohort studies; high quality case-control or cohort studies with a very low risk of confounding or bias and a high probability that the relationship is causal”). The rationale for this recommendation was the evidence that toothbrushing is effective to remove plaque, toothbrushes are more effective than foam swabs.
to remove plaque, and toothbrushes are more economical. In cases where toothbrushing is not advisable (elderly patients, patients susceptible to bleeding), foam swabs are recommended (Grade D; type of evidence = 4: evidence from expert opinion). The rationale for this recommendation was that a toothbrush could cause irritation in geriatric patients and foam swabs are less abrasive.

A guideline from the British Society for Disability and Oral Health was published in 2000. The guideline focused on patients and residents in long-stay, and stated that a foam stick is not as effective as a toothbrush for oral hygiene. No information about the methods used to develop these guidelines was reported.

Limitations

No high-quality evidence from health technology assessments, systematic reviews, or randomized controlled trials on the use of oral care sponges was identified. The one study that was identified was a controlled study in 34 participants, but did not randomize the patients to the two groups. Each participant used both interventions, which may have affected the findings. In addition, the study included participants from the general population, and it is possible that initial plaque levels could be higher in other populations. It was suggested by the study authors that results may be different if the brushing is conducted by another person, such as a nurse, as opposed to the participants conducting the mouth care themselves.

One of the guidelines that was identified was not specific to the long-term care patient population, but reference to the elderly patient population was made. The second guideline was specific to patients in long-term care but no information on how the guidelines were developed was reported. It does not appear that the recommendations were graded in the latter guideline.

CONCLUSIONS AND IMPLICATIONS FOR DECISION OR POLICY MAKING:

Limited evidence for the use of oral care sponges was identified in the literature. One controlled clinical trial in the general population concluded that a toothbrush was more effective than a foam swab for plaque removal. The information in the published guidelines on oral care was also limited. Both guidelines stated that an oral care sponge or foam swab is not as effective as a toothbrush for dental care. One guideline, however, also stated that a foam swab was recommended if toothbrushing could cause irritation, such as in the geriatric population. No evidence about the safety of using oral care sponges was identified.

Overall, the limited literature states that an oral care sponge is not as effective as a toothbrush for plaque removal and dental care. The decision to use oral care sponges should take into consideration the oral health of the patient. One guideline also stated that a toothbrush was more economical than an oral care sponge, which may be a consideration for decision-making.

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REFERENCES


APPENDIX 1: ADDITIONAL INFORMATION

A review article on oral care procedures by nurses was published in 1999, and discussed the use of foam swabs versus toothbrushes. This review article reported that the most effective method for dental plaque removal was toothbrushing, but a foam swab is preferred by most nurses. A foam swab was reported to be ineffective for plaque removal, but caused less soft tissue deterioration in older patients. This review also stated that toothbrushes are the most cost-effective.