Dental Crowns: A Review of the Clinical and Cost-Effectiveness of All-Ceramic versus Metal-Ceramic Crowns

Context
Dental crowns are a type of dental restoration that work to protect a damaged tooth while improving its appearance. The gold standard for the repair of damaged teeth has been porcelain fused to metal (PFM) crowns; however, crowns crafted from other materials are also available.

Technology
A dental crown is a cap placed over a damaged tooth. Common types of tooth damage include large cavities, a cracked tooth, discolouration, or a misshapen tooth. A cap improves the appearance of the tooth while restoring its strength, size, and shape. Permanent crowns can be made from stainless steel, metal (such as gold or another alloy), porcelain fused to metal, resin, or ceramic.

Issue
PFM crowns have been the standard of therapy because of their mechanical properties, satisfactory esthetic results, and acceptable biologic quality needed for periodontal health. However, their fabrication requires considerable skill and the use of precious metals — the cost of which has risen markedly. The metal framework also creates an esthetic challenge. Ceramic crowns offer an alternative to PFM crowns and have been used during the last four decades. While they do offer an improved appearance compared with PFM, their resistance to fracture and chipping is uncertain. A review to assess the clinical effectiveness and cost-effectiveness of all-ceramic crowns compared with PFM crowns will help to inform decisions about their use and reimbursement.

Methods
A limited literature search of key resources was conducted, and titles and abstracts of the retrieved publications were reviewed. Full-text publications were evaluated for final article selection according to predetermined selection criteria (population, intervention, comparator, outcomes, and study designs).

Key Messages
PFM versus All-Ceramic Crowns for Anterior Teeth:
- Comparable survival rates in the short term (<5 years)
PFM versus All-Ceramic Crowns for Posterior Teeth:
- Depends on the type of ceramic used in the all-ceramic crown, with some having lower survival rates (newer types are now available)
The long-term survival of porcelain jacket crowns is lower than PFM crowns (but newer types of ceramic are now available making this finding uncertain). Cost-effectiveness is uncertain.

Results
The literature search produced 746 citations of which 8 were deemed potentially relevant. An additional 3 articles were identified from the grey literature. Of these 11 reports, 6 met the criteria for inclusion in this review; 1 systematic review, 2 randomized controlled trials, 2 non-randomized studies, and 1 cost-effectiveness study.

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