A Systematic Review of Oral Health Interventions to Reduce Disparities in Adults with Intellectual Disability: Results of a Novel Approach

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A Systematic Review of Oral Health Interventions to Reduce Disparities in Adults with Intellectual Disability: Results of a Novel Approach
Christine J. Clifford², MHP; Alexandra Bonardi², MHA, OTR/L; Matthew Holder³, MD, MBA

Background
Recognizing access to oral health care as a public health challenge, Healthy People 2020 introduced oral health goals to reduce untreated caries, to reduce dental decay, to reduce tooth extraction due to dental disease, and to increase the use of sealants. The Centers for Disease Control Oral Health Strategic Plan (2011-2014) included a goal to eliminate disparities in oral health and an associated strategic initiative broadening “the understanding of health disparities, determinants of health disparities, and evidence-based approaches to addressing disparities in oral health.”

Research consistently shows that the population with Intellectual and Developmental Disability (I/DD) experience poorer oral hygiene, higher prevalence and severity of periodontal disease, and higher incidence of untreated caries than the general population. In this systematic review researchers rigorously evaluated the evidence for a wide range of oral health interventions with the potential to reduce disparities in individuals with I/DD.

Methods
A robust search of on-line data bases such as PubMed, along with gray literature sites, was conducted. Inclusion criteria for systematic review: English language studies published between 1990 and 2013; intervention and outcomes described; population with intellectual disability could be identified in the reported results. Data extraction was conducted using the Systematic Review Data Repository (SRDR).

Studies fell into 4 topic areas: prevention strategies, sedation use, education & behavioral strategies, access & potential models of care. Literature and reports that did not meet the standard for inclusion were reviewed for inclusion in a promising practices document.

Final steps include dissemination of both the systemic review findings and a promising practices document.

Results
19% of the articles were RCTs, and 5% were randomized with no control; 18% of the articles were prospective cohorts and 12% retrospective; 10% of the articles were non-randomized trials. The study team tailored the extraction tool to address Key Questions for each specific topic. Of reviews in agreement, 26% were rated “good.” The results of these studies are shown in the table below as the best-available evidence. The small number of articles with similar interventions and outcomes limits the ability to aggregate findings and establish robust evidence of effective interventions.

Summary
Only 19% of extracted articles in the systemic review were RCTs, however employing a transdisciplinary model that incorporates environmental and organizational factors allowed for the inclusion of other literature and for the development of a promising practices document. The expanded model allowed for the inclusion of 125 articles across 4 topic areas to examine results, review and assess quality. The variety of interventions examined in this study points to several promising areas to reduce oral health disparities. Research methods must be applied to existing clinical interventions to build the evidence base for the most effective interventions to reduce oral health disparities.

Human Development & Disability Cooperative Agreement # 1U01DD000914-01; 2Center for Developmental Disabilities Evaluation and Research, University of Massachusetts Medical School, 3American Academy of Developmental Medicine & Dentistry

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**Systematic Review Key Questions**

KQ1: What effective interventions/strategies exist to improve access to oral health care for the I/DD population?

KQ2: What effect do interventions that support good oral health behaviors have on improved oral health care for the I/DD population?

**Review of Study Quality**

Study quality was assessed by examining external and internal validity. Quality was assessed for each article by clinical experts (i.e., dentists and dental hygienists), as well as a biostatistician. Experts answered the same questions, but from their respective perspectives. Reviewers rated the study population, intervention description, sampling strategy, measurement of the intervention and outcomes, data analysis and interpretation of results. In 41% of the 125 reviews the clinician and biostatistician assessments were in agreement.

**Results Table**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Indication of Evidence: Does intervention improve oral health outcomes?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education/Behavior</td>
<td>Behavior management techniques may improve cooperation of individuals with I/DD in oral health care and treatment. Individual and caregiver education programs indicate improvement in oral health measures. Provider exposure to individuals with I/DD indicates increased likelihood to care for individuals with I/DD.</td>
</tr>
<tr>
<td>Sedation</td>
<td>Sedation (in various forms) considered safe &amp; effective with minimal side effects, and is a reasonable option for delivering/receiving oral health care in certain circumstances.</td>
</tr>
<tr>
<td>Prevention</td>
<td>Use of Chlorhexidine (various forms) results in improved gingival index scores.</td>
</tr>
<tr>
<td>Access</td>
<td>A specialized program, with referral to a specialty dentist, school based program, that brought the dentist to the school, and an analysis of managed care data indicated that enrollment in managed care may increase positive outcomes for individuals with I/DD.</td>
</tr>
</tbody>
</table>

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**Table of Topic Indications**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Rating</th>
<th>% of Reviews in Agreement by Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access</td>
<td>fair</td>
<td>0-20%</td>
</tr>
<tr>
<td>Access</td>
<td>good</td>
<td>21-30%</td>
</tr>
<tr>
<td>Access</td>
<td>very good</td>
<td>31-40%</td>
</tr>
<tr>
<td>Access</td>
<td>excellent</td>
<td>41-50%</td>
</tr>
</tbody>
</table>

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**Figure**

A Prisma Chart (modified) illustrates the systematic review process. The chart details the number of articles excluded at each stage of the review, from a total of 4,854 articles. The chart shows that 400 articles were included in the full text review and data extraction process. Further breakdowns show contributions from education, behavioral strategies, access, and potential models of care.