Concussion & Permanent Hearing Loss
Kayla Danino
M.C.I.Sc. Candidate – Audiology
School of Communication Sciences & Disorders, Faculty of Health Sciences, Western University

Introduction

Concussion is defined as a traumatic brain injury that alters the way the brain functions. Symptoms are usually temporary and may include the following: dizziness, headache, nausea, loss of consciousness, confusion, tinnitus, and fatigue (Mayo Clinic). Temporary hearing loss is rarely associated with concussion, however even permanent loss has been reported. The small yet possible outcome of permanent hearing loss resulting from concussion has necessitated a review of the literature to determine validity of this relationship and to increase awareness of permanent health outcomes involved with concussion.

Question

Does concussion cause permanent hearing loss in adults with a history of concussion?

Search Terms

Adverse effects of concussion, closed head injury, hearing loss

Inclusion / Exclusion Criteria

Inclusion:
- Studies that looked at closed head injury
- Studies that looked at hearing loss

Exclusion:
- Studies that did not look at closed head injury
- Studies that did not look at hearing loss

Literature Search

A systematic review of the literature was conducted. Four search terms were combined and run through the following databases: PubMed, Scopus, and EMBASE. The search yielded a total of 793 articles. The number of results from each search is outlined in the table below.

<table>
<thead>
<tr>
<th>Database</th>
<th>Search Terms</th>
<th>Total Results</th>
<th>Excluded Results</th>
<th>Included Results</th>
<th>Percentage of Inclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>PubMed</td>
<td>concussion &amp; permanent hearing loss</td>
<td>793</td>
<td>727</td>
<td>66</td>
<td>8.4%</td>
</tr>
<tr>
<td>Scopus</td>
<td>concussion &amp; permanent hearing loss</td>
<td>793</td>
<td>727</td>
<td>66</td>
<td>8.4%</td>
</tr>
<tr>
<td>EMBASE</td>
<td>concussion &amp; permanent hearing loss</td>
<td>793</td>
<td>727</td>
<td>66</td>
<td>8.4%</td>
</tr>
</tbody>
</table>

After removing duplicates from different database search results, 11 articles were reviewed, critically appraised, and key data was extracted using the data extraction tool. The results can be viewed in the next section of this paper.

Conclusions

Eleven articles were critically appraised for their quality using the Crowe Critical Awareness Tool (CCAT) Version 1.4. A data search tool was used to obtain key information from each article. This tool consisted of 8 categories: author and publication date, objective, sample size and participant characteristics, intervention, results, conclusion, implications, and a CCAT quality score. Information for each article can be seen in the table below.

References