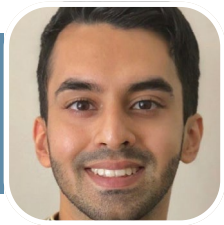
EBD spotlight:
Is the oral health of visually impaired children and adolescents different compared to their sighted peers?



Manas Dave[1] reflects on topics discussed in our sister journal *Evidence-Based Dentistry*.

Oral health issues in children and adolescents with vision impairment: A systematic review and meta-analysis was published in the *International Journal of Paediatric Dentistry* this year.[1] A commentary on the paper was published in *Evidence-Based Dentistry* this September.[2]

Visual impairment (VI) is categorised as mild, moderate or severe distance VI (blindness) and near VI. It is estimated that 43 million people globally were blind in 2020 with this number expected to increase to 61 million people with blindness.[1] From a dental health perspective, the reduced ability to visualise dental plaque has been associated with higher prevalence rates of periodontal disease and dental caries.[3] The aim of this systematic review and meta-analysis was to assess the main oral health issues of children and adolescents with VI.[2]

Methods

An electronic database search of PubMed, Web of Science and Scopus were conducted on articles published up to May 2021. The grey literature was also searched using OpenGrey, the Brazilian Digital Library of Theses and Dissertations and Google Scholar (the first 300 of this were screened). Hand searching was conducted of reference lists from the included studies. Only observational studies (cohort, cross-sectional and case-control) were included. Studies whose participants had other disabilities that could limit their ability to perform oral hygiene were excluded. There were no language restrictions. Quality assessment was undertaken using the Joanna Briggs Institute (JBI) of the University of Adelaide.

Results

Fifteen articles were included in this systematic review (all cross-sectional studies) of which 12 were eligible for meta-analyses.

The included studies which spanned a period of 42 years (1971–2021). Participants ranged from 2–21 years of age. Regarding the type of VI, three studies reported patients with blindness only, two studies reported those with total and partial VI and ten studies did not specify the degree of VI.

The prevalence of dental caries ranged from 40%–84% for those with VI and 11.5%–83% for those with no VI. Traumatic dental injuries ranged from 9%–25% for those with VI and 3.4%–8.7% in those without VI. Bleeding on probing was recorded at 0.6%–62.6% and 2.7%–55% in those with VI and those without respectively. Good oral hygiene ranged from 22.8%–58% and 49.4%–65% in those with and without VI respectively.

Individuals with VI had a significantly higher number of systemic diseases ($p = 0.002$) and had fewer dental visits ($p = 0.028$) compared to those without VI.

An overjet of >3.5 mm significantly increased the risk of traumatic dental injury amongst individuals with VI ($p = 0.043$).

The meta-analysis showed the dental plaque index was 3.74-fold higher in those with VI compared to those without VI (SMD = 3.74, CI = 1.77–5.71, I2 = 99%).

The gingival index was 3.53-fold higher in those with VI compared to those without (SMD = 3.53, CI = 0.38–6.68, I2 = 99%).

For calculus (using the Calculus Index – Simplified Green and Vermillion), the score was 0.04-fold higher in those with VI (MD = 0.71, CI = 0.24–1.18, I2 = 97%).

For assessment of the prevalence of dental caries, there was no difference between the two groups (OR = 2.04, CI = 0.89–4.68, I2 = 83%) however the decayed missing filled surfaces (DMFS) score was significantly higher in those with VI (MD = 0.90, CI = 0.68–1.13, I2 = 98%). It is of note that there was no difference

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observed for DMFT and dmft scores between the two groups.

Those with VI were 3.09 times more likely to experience a traumatic dental injury compared to those without VI (OR = 3.09, CI = 1.88–5.08, I2 = 42%).

The risk of bias assessment using the JBI critical appraisal tool showed three studies had a low risk of bias in all domains. Other studies had a high risk or unclear risk of bias in at least one domain.

Conclusions

The authors concluded:

'…children and adolescents with visual impairment have a higher chance of having TDI and have higher index values (and therefore, poorer outcomes) for DMFS, dental plaque, gingival inflammation, calculus, and oral hygiene status.'

Comments

The studies included in this systematic review evaluated a range of different outcomes and used different indices, hence only a few were included in the meta-analysis. It was not possible to correlate the degree of VI with dental indices given this was not reported by the majority of studies. The authors excluded studies where participants had other disabilities that could have affected their ability to perform oral hygiene activities. The inclusion of this group would have provided more insight on the impact of blindness in children and adolescents with other conditions. This study identifies the increased risk of dental disease in those with VI, hence a proactive preventative approach is needed when providing oral health care to these patients. Additionally, there are measures dental practices can implement to improve access to dentistry and oral health promotion for those with VI.[4,5] This study also highlights the limited literature and need for further research in this field.

Author information

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