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Review Article

Oral health problems and dental service utilization in children with hearing impairment: a narrative review

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ABSTRACT

Children with hearing disability face challenges on accessing healthcare services caused by their lack of ability to express their oral health problems and affect their oral health status. This narrative review aims to explore oral health status in hearing impaired children and discuss in detail about dental service utilization in children with hearing impairment. Many studies assessed oral health status of children with hearing impairment. A comprehensive retrieval of the English literature from 2012 to 2022 was done in PubMed, ScienceDirect and ProQuest. Oral health assessments including dental caries, gingival problems and periodontal condition. Healthcare seeking behavior of the parents of hearing-impaired children is reflected by dental service utilization. Hearing impaired children have a high prevalence of caries, high caries activity and poor gingival condition compared to their counterparts. There are unmet dental treatment needs due to their dependence on parents or caregiver on decision making. Proper oral health educational method for hearing impaired children and their parents or caregiver is needed to improve oral health status and dental service utilization.

Keywords: Dental service utilization, Hearing impaired, Oral health status, Treatment needs

INTRODUCTION

Oral health is one of determinant for general physical health in every individual. Maintaining oral health especially in young age is important for a lifelong oral health well-being. Children are prone to develop oral health problems due to their lack of ability on performing oral hygiene practice and still depend on their parents or caretaker to maintain their oral health. Hearing impairment is one of physical disability faced by 34 million children of the world's population.[1] Hearing loss in children can be caused by genetical factors, intrauterine infections, complications at birth and certain infectious diseases. If unaddressed, hearing loss can negatively impact affect many aspects of life, including development of language and social skills.[1] Children with hearing impairment experience communication barriers limiting their ability to express their needs.

Healthcare seeking behavior has been defined as actions taken by individuals who perceive themselves to have health problems with the aim of finding appropriate treatment. This is based on an explanatory model that represents a person's specific attitudes that influence health behavior. Health seeking behavior is preceded by a decision-making process which is further governed by individual behavior, community norms and expectations related to a person's characteristics and behavior.[2] Utilization of health services is directly related to the health service system in the country and the available health service facilities. The pattern of utilization of health services is reflected by the behavior of seeking health services.[3] The purpose of this narrative review is to explore oral health status of children with hearing disabilities and their utilization of the dental health services.

LITERATURE SEARCH

The narrative review summarizes oral health status of hearing-impaired children and their dental service utilization. A comprehensive literature search in article published in 2012-2022 using database PubMed, ProQuest and ScienceDirect. Keywords are determined according to MeSH term from National Center for Biotechnology Information. Research studies published in English and available in full text exploring oral health status of children with hearing disability and their dental service utilization were included in this review. 221 articles from 3 databases were retrieved, after selection of abstract and duplicates removed, there are 12 articles that were thoroughly read and evaluated. 6 articles about oral health status in hearing impaired children, 6 articles about treatment needs and dental service utilization. This review is arranged under the subheading persons with hearing impairments and dental health services.

DISCUSSION

Oral health status of hearing-impaired children

In a study exploring oral health status of 149 hearing-impaired students aged 7-30 years old attending special schools in Ethiopia, a significant number of hearing-impaired students had periodontal disease and dental caries. The data of oral health status recorded were caries status using DMFT (Decayed, Missing and Filled Teeth) index, oral hygiene status using OHI-S (Oral hygiene index-simplified), and periodontal status using CPI (Community periodontal index). The prevalence of dental caries was 38.9% (95% CI; 32.2, 46.9) and the mean DMFT score was 1.15±1.654. The prevalence of periodontal disease was 22.8% (95% CI: 16.8, 30.4) and 43.6% (95% CI: 35.6, 51.2) of the study participants had bleeding on probing. Students with poor oral health status were 8.07 times more likely to have dental caries compared to good oral health status students (AOR=8.07 (95% CI; 2.49, 26.18).[4]

Dental caries and periodontal status of 540 institutionalized hearing-impaired children aged 5-15 years old were assessed in Khordha district India. The prevalence of dental caries was 19.3% with overall mean DMFT score was 0.37±0.88. The low caries prevalence in this population related to a well-balanced diet with supervised intake of refined carbohydrates monitored by the school authorities. But this study showed poor gingival health of the hearing-impaired children with 71.1% prevalence of periodontal problems with 23.9% had bleeding on probing and 47.2% had calculus. This may be attributed to the individual's attention to proper brushing techniques, quality of care given by parents and community oral health programmers.[5]

A study exploring oral health status of 180 students aged 6-16 years in special school for deaf children in India. Caries prevalence was found in 65% of the students with the highest prevalence rate in age group 9-12 years old. The mean plaque and gingivitis scores were found to be 1.70±0.61 and 1.59±0.58 with 81% had moderate to abundant deposits of plaque and 78% exhibited moderate to severe gingival inflammation. The 91.7% of the students had unmet dental treatment.[6] In three special needs schools in New Delhi, India, dental caries prevalence in 360 hearing-impaired children aged 6-16 years old was 73.7%. The overall mean DMFT and DMFT scores were 1.38±2.27 and 1.15±1.71, respectively with 61.4% children had high caries activity. 67.8% children have unmet dental preventive treatment needs in the form of pit and fissure sealants and 52.5% curative treatment needs in the form of dental fillings. 84% of the students had moderate gingivitis and the mean gingival index score was 1.20±0.15.[7]

Assessment of oral health status of 116 hearing impaired children aged 5-16 years old in Saudi Arabia. Dental caries was found in 65% of children and gingival bleeding in 47% of children. It was observed that 76% of the children required prompt treatment.[8] Oral health status of 106 hearing impaired children aged 5-15 years old attending special school was assessed in Pakistan. Dental caries prevalence was 68.9% with overall mean DMFT score of 7.58±2.62. 48.1% had good hygiene status with overall mean OHI-S score of 1.45±1.01. Majority of these children had never visited a dentist for any treatment or check-up. This study also assessed the relationship of dental caries with brushing frequency, eating habits, dental visits and obesity. They found that dental caries predominantly affecting children who brushed their teeth once a day, children who consumed confectionaries/juices/sweet milk, children who had never visited dentist and children who were obese.[9]

Dental treatment utilization in hearing impaired

The assessment of health seeking behavior can be seen from the aspect of healthcare facility and individual health-related knowledge and attitude. An institution-based cross-sectional study was conducted in eight special needs schools located in the Amhara Regional State, Ethiopia. One-third of the participants had hearing impairment with inter-quartile range of years lived with disability was 14 (12-16 years). More than half of study participants reported dental problems but 40% did not seek for dental treatments. Fear and cost of treatments were two main barriers not to sought dental care. About 82% students did not get adequate support from their family members to maintain good oral health.[10]

On a quantitative cross-sectional study using structured questionnaire administered to dentist and people with disabilities, one-third of people with disabilities, 36.8% of them with hearing disability, a large percentage only seeks dental treatment for dental emergencies only, rather than for preventive and restorative care. The difficulty in communicating with the dentist during clinical care reported by the majority of deaf people and the lack of

interpreters at the clinic necessitates the presence of a family member or a listener to intermediate the communication. Eventhough more than 50% dentist and persons with disabilities agree that dentist can easily communicate with deaf people.[11]

Around 76% of 75 schoolchildren in Tamil Nadu aged 7-14 years old attending special needs schools required prompt dental treatment. But 73.7% of the children in the 7-10 years age group and 64.3% in 11-14 years age group have never visited a dentist. Among those children who had previous dental visits, most of them only visited when there is any pain or discomfort. Around 88% of the children faced communication difficulties at the dental clinic. This study suggest dentists to be sensitive to nonverbal communication and use sign posters, brochures and pictures to help explain dental procedure.[12]

In a study assessing parent's view about oral health status of their hearing-impaired children attending special needs schools, 57.4% of parents reported no problems in their child's dental health and 45.9% of children had never visited a dentist. Dental services utilization was almost limited to urgent practices instead of preventive care. It was maybe due to low priority of oral health compared to the condition of the children's hearing impairment, lack of knowledge, and the cost of dental treatments.[13]

A study comparing oral health status of college students in Thailand, there are no significant differences between caries prevalence and oral hygiene status in hearing-impaired children and normal hearing children. Most children visit the dentist when having symptom, but dental service utilization was slightly higher in normal hearing children. Hearing impaired students were less likely to have access to dental treatments.[14] A study in Brazil comparing caregivers of hearing-impaired and normal hearing children's self-perception towards their children's oral health condition, hygiene habits and healthcare seeking behavior. There are no significant differences between the results in the perception of their children's oral health but the reason for prevention treatment in last dental visit appointment is higher in normal hearing children, 57.1% and 87.5% among hearing impaired and normal hearing children, respectively.[15]

CONCLUSION

Most studies assessing oral health status and treatment needs in hearing impaired children was conducted in special needs school settings. Previous studies have reported a high prevalence of dental caries, periodontal problems and unmet dental treatment needs with low attendance to dental services. The use of hearing-impaired children's dental health services was determined by parents or caregivers. An effective method of oral health education is needed for hearing-impaired children and their parents or caregivers. School based health promotion program is also recommended to improve oral health status and dental service utilization of hearing-impaired children.

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