

ORIGINAL ARTICLE

Oral Health and General Health in Children Having Intellectual Disabilities: A Cross Sectional Study

Maryam Rehman, Ridha Humayun Kabir, Anum Zehra, Komal Syeda, Noor Fatima

ABSTRACT

Objective: This study aimed to assess the correlation between oral health and general health in children having intellectual disabilities.

Study Design: Cross-sectional, questionnaire based study.

Place and Duration of Study: This study was conducted at Step to Learn School, Islamabad and Rawalpindi, from May to June 2014.

Materials and Methods: A sample of 88 children were selected from two branches of 'Step to Learn', a special school for children with intellectual disabilities. Body Mass Index (BMI) was used to assess general health, while oral health was measured by the Decayed, Missing, Filled Teeth (DMFT) index. Dental surgeons and dental students conducted the examination. Pearson's correlation coefficient was used to compare the correlation between BMI and DMFT. The data was analyzed using the software SPSS (v 17.0).

Results: Out of 88 children, data of 85 (96.59%) was recorded. No significant correlation was found between oral health and general health ($r = -0.06$).

Conclusion: The general health of children with intellectual disabilities does not impact their oral health. Subsequent oral and general health educational initiatives should be conducted separately.

Key Words: *Intellectual disabilities, General Health, Oral Health.*

Introduction

Intellectual disability is a generalized disorder appearing before adulthood characterized by significantly impaired cognitive functioning and deficits in two or more adaptive behaviors. It is classified as an Intelligence Quotient score of under 70 and further categorized as mild, moderate, severe and profound.¹⁻³ Disability is a general term that includes impairments, activity confinements and participation restriction. Impairment is a problem in body function or structure; an activity confinement is a difficulty faced by a person in performing a task or an action while participation restriction is a problem experienced by a person in life situations.

Previous studies have reported that the children with intellectual disabilities have similar incidence of caries and more frequent extractions as compared to the general population, still they have a higher level of unmet dental needs.⁴⁻⁶ Numerous international

studies have highlighted the importance of oral hygiene in children having intellectual disabilities;³⁻⁵ however, very few studies have been conducted on this issue in Pakistan. Studies have also shown that oral health is the most ignored angle for these people.⁷ General health conditions are apparently more important than oral health as the connection between oral and general health is not properly apprehended.^{8,9} This is further substantiated by the fact that oral health problems have been reported to be in the top ten secondary conditions among the children with intellectual disabilities. Such children are more vulnerable and socially excluded in the society.⁴

In Pakistan, there is a paucity of oral health care services for children with intellectual disabilities. The major barriers are described by using Penchansky and Thomas: Model of Access, five themes of which are availability, accessibility, accommodation, affordability and acceptability.^{5,9,10} Availability measures the degree to which the dentist has the resources such as personnel and technology to meet the needs of these children, e.g. in Pakistan, the ratio of dentists to population is small and no department is available to specifically cater for the needs of these children. Accessibility determines the geographical location of the dental clinic and how conveniently the client can reach there. Another aspect is

Department of Community Dentistry
Islamic International Dental College
Riphah International University, Islamabad

Correspondence:
Maryam Rehman
Department of Community Dentistry
Islamic International Dental College
Riphah International University, Islamabad
Email: maryamrehman_1946@hotmail.com

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whether the client can physically access the premises e.g. children with impaired physical health have difficulty in climbing the stairs but elevators are not frequently available. Accommodation reflects the willingness of the dentist to prioritize the needs of these children e.g. there is no particular department with extended opening hours to accommodate these children or which schedules an appointment as per convenience. On top of that, the dentists usually hesitate in accepting the case. Affordability refers to the socioeconomic status of the children's families and the fee of the dentist e.g. the oral health care services are very costly thus making it unaffordable for children with intellectual disabilities from lower strata of society.⁵ Finally, acceptability depicts the comfort level of these children and the dentists regarding the treatment. The dentists are unequipped for such cases and their hesitation increases the anxiety level of these children.

The children with intellectual disabilities should be given equitable care as is the moral and professional obligation of the dentists. They share the same entitlement to good oral health as the rest of the society.¹

Although a few studies have been carried out to assess the correlation between the general and oral health of intellectual disabilities, the evidence available is limited. Also, this correlation has not been investigated among individuals with a South Asian ethnicity. The aim of this cross sectional study was to assess any correlation between oral health and general health in children having intellectual disabilities.

Materials and Methods

This cross-sectional study set out to assess the association between general and oral health. For the purpose of data collection, a school for children with intellectual disabilities, 'Step to Learn' (STL) was selected. STL has two branches: one in Islamabad and the other in Rawalpindi. A dental team comprising of dental surgeons and dental students from Islamic International Dental College (IIDC) visited the two branches of STL for data collection. The two branches of STL had a students' strength of about a 100 students. The dental team visited the two branches on two separate days. Before the dental visit, the school administration obtained informed consent from the students' parents.

Caries, experience, measured using the 'Decayed, Missing and Filled teeth (DMFT) index was used as an indicator for oral health. The DMFT is a validated index for the assessment of dental caries that has been used for measuring caries experience for about a century¹¹ To measure general health, BMI was used.

The examination was carried out by the students. Each station was assigned a particular task. One of the stations was allocated to calculate the BMI using a commercial weighing scale and measuring tape. Three stations were designated to check the DMFT using tongue depressors and torches. For behavioral management, positive reinforcements and Tell-Show-Do techniques were used e.g. after the children successfully let the dental surgeons examine their oral cavity and record weight and height they were given stickers. Students frequently demonstrated the use of weighing scale by getting up on it and the children were shown how DMFT is done by observing the process on another child.

Statistical Package for Social Sciences (SPSS v 17.0) was used to insert, consolidate and analyze the data. Mean and standard deviation were used to describe BMI and DMFT. Pearson's correlational analysis was used to analyze any association between BMI and DMFT.

Results

Our sample size comprised of 88 children out of which 29 (33%) were females and 59 (67%) were males.

Table I illustrates the frequency distributions of the various conditions of the children. Multiple disorders included children having more than one aforementioned condition along with growth retardation, cerebral palsy and physical

Table I: Distribution of the Conditions of Children

Conditions	Frequency (%)
Autism	43(49.4)
Down's syndrome	4(4.6)
Hearing and speech impairment	21(24.1)
Intellectual disability	3(3.4)
Multiple	16(18.4)
Total	87(100)
Missing	1
Total	88

BMI and DMFT of 85 patients were checked. The BMI frequencies have been illustrated in Table II. Three of the patients were non-compliant.

Table II: Frequencies of Ranges of BMI

BMI Range	Frequency (%)
Normal	25(29.4)
Underweight	55(64.7)
Overweight	4(4.7)
Obese	1(1.2)
Total	85(100)
Missing	3
Total	88

impairments. Condition of one of the children could not be specified.

DMFT Score was generally high as every child had a different limitation and this made the result variable. Two of the children had severe physical disabilities due to which BMI could not be calculated and one child was uncooperative. Majority of the children were found to be underweight. Interestingly, a greater part of the sample had a DMFT Score of zero. The DMFT Score of the obese child was zero. The overweight children had less DMFT Score than the underweight children while the DMFT Score of the children having normal BMI was found to be the highest. Since there was only one obese child, the result was not conclusive.

Table III illustrates the frequencies of DMFT scores. Three of the patients were non-compliant.

Table II: Frequency of DMFT Scores

DMFT Scores	Frequency (%)
0	40 (47.1%)
1	6 (7.1%)
2	14 (16.5%)
3	7 (8.2%)
4	4 (4.7%)
5	3 (3.5%)
6	3 (3.5%)
7	3 (3.5%)
8	1 (1.2%)
10	1 (1.2%)
11	2 (2.4%)
12	1 (1.2%)
16	1 (1.2%)

The mean DMFT score was 2.15 ±3.15, while mean DMFT score for children having normal BMI was calculated to be 2.92±3.70, the score of 1.89±3.03 was calculated for the underweight category, 1.50±1.29 for overweight and zero for the obese. (Fig 1) The prevalence of dental caries in the sample was

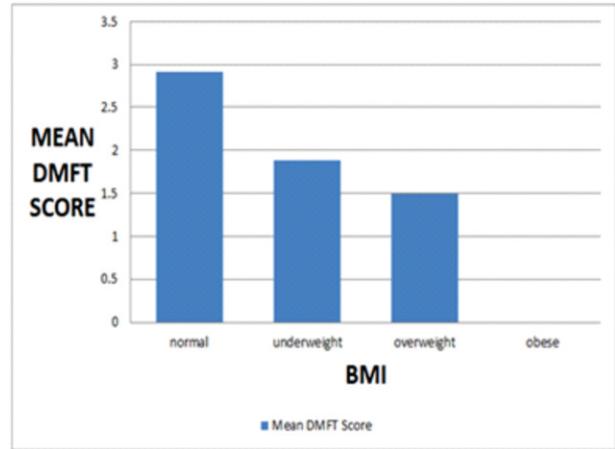


Fig 1: Mean DMFT Scores for Different BMI Categories

found to be 48.2%.

A very weak negative correlation was found between DMFT and BMI ($r = -0.06$).

Discussion

The present study found a very weak correlation between general and oral health of children with intellectual disabilities. Reasons for this could be that the sample size was too small and the DMFT score was low. Another factor could be that females are more prone to caries but this is not a universal phenomenon.¹²

The prevalence of dental caries in this sample was found to be 48.2% as compared to 53.5% found in children with intellectual disorders in Guangzhou, China¹³ and 79.6% in young athletes with intellectual disorders in Indonesia.¹⁴ The low dental caries prevalence in our study could be explained by our low sample size. Furthermore, our sample was selected from a private school where both the parents and care givers of the children reported paying special attention to the hygiene of children. Male to female ratio was not accounted for throughout the study so this is not an accurate representation of this community. The sample size was too small to find any significant correlation or pattern between DMFT and BMI. Alternatively, oral health was well maintained. Results were inconclusive because some of the children had severe physical impairments which made them unable to get their heights and weight measured accurately. Therefore, the dentists used approximation for such cases. Additionally the DMFT score results proved to be an underestimation rather than overestimation. The children were provided

with tooth brushes and tooth pastes to encourage oral hygiene and good behavior. They were also demonstrated the correct tooth brushing technique. The parents were advised not to give too many sweets to the children as a reward for good behavior. They were also advised against regular snacking. The guardians and parents of these children were invited and their queries were facilitated. Moreover, they were given the contact details of the Islamic International Dental Hospital (IIDH) where they could be further accommodated.

The limitations of the study were that the participation of the students was low due to absence of registered students and apprehensions by a few as reported by the school administration. Furthermore, children with intellectual disabilities who do not attend school were not considered in this study. Therefore, socioeconomic status could have been a possible confounder for the study.

Conclusion

Since no correlation could be determined between oral and general health of children with intellectual disabilities, both should be dealt separately. Oral health and general health education for children with intellectual disabilities and their caregivers should be provided. It would be beneficial if educational programs covering basic items of oral health care are introduced to train the children as well as the parents and caretakers.^{4,9,15}

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