Oral Health and Care

Research Article ISSN: 2399-9640

A Comparison of DMF index and oral hygiene index between down syndrome subjects and a control group in Riyadh

Haifaa Al-damri*, Razan Al-humaid, Sara Al-shehri, Samaa Al-otaibi and Abdulqadir Abdulwahid

Riyadh Colleges of Dentistry and Pharmacy, Saudi Arabia

Abstract

Introduction and objective: Down syndrome is a genetic disorder of chromosome 21 that is characterized by physical and mental disability. The incidence of Down Syndrome in Saudi Arabia is estimated to be 1 in 500, which is higher than the world average. Many studies have been done around the world to compare the DMF Index and OHI between the children with Down Syndrome and the normal children. No such study has been conducted in KSA therefore the aim of this study was to compare the DMF Index and the Oral Hygiene Index between the children with Down Syndrome and normal children with no Down Syndrome in Riyadh, KSA.

Materials and methods: It was a cross-sectional, observational clinical study with a sample size of 200 subjects. Our control group was composed of 100 Normal Children who were randomly selected and examined at an elementary public school in Riyadh. The other 100 subjects were Down Syndrome children. These subjects were examined at DSCA center, Saudi center for down syndrome, and Saut society in Riyadh. Oral examination done by using regular examination instruments on regular chair. The indexes used in this study:

Decayed-Missing-Filled Index (DMFT)

Oral hygiene index (OHI)

Results: All data was analyzed by Excel software using the student's t-test

There was no statistically significant difference between any of the parameters in the control and study group. The results were calculated at 95% confidence level (P value = 0.05)

After comparison the values were:

D= 0.059, M=0.090, F=0.65, and OHI=0.098.

Conclusion: No statistically significant difference was observed in the DMF index or OHI between the Down syndrome subjects and the normal subjects in the control group.

Introduction

Down Syndrome is a genetic disorder of chromosome 21 that is characterized by physical and mental disability [1]. The incidence of Down Syndrome in Saudi Arabia is estimated to be 1 in 500 [2]. This percentage is higher than the Down Syndrome prevalence around the world that is estimated to be 1 in 700 [3]. The physical disabilities of Down Syndrome include underdeveloped midface, flat occiput, open bite, mouth breathing, small nose, small mouth, small and dysplastic ears [4]. Mental disability includes general anxiety, repetitive and inattentive behavior and obsessive-compulsive behaviors [5]. Oral manifestation includes macroglossia,oligodontia,microdontia, fissured lips and tongue, missing and malformed teeth, small roots, delayed eruption times, angular cheilitis, and crowding [1].

Most of the studies done around the world have reported that even with decreased learning ability the Down Syndrome patients have similar caries prevalence, and oral hygiene. No such study is available for the Saudi population; it is therefore required to do a similar study in the Saudi population to compare with other parts of the world.

Limited centers provide dental care for Down Syndrome children; only large hospitals have centers that provide dental care for Down Syndrome children. The treatment is mostly done under general anesthesia, rarely on dental chair. Dental schools do not welcome Down Syndrome children to be treated by undergraduate students.

Aims of the research

The aim of the study is to evaluate caries rate and oral hygiene in Down Syndrome children between 8 and 12 years old. The study will be conducted in DSCA Center, Saudi Center for Down Syndrome, and Saut Society in Riyadh.

Null hypothesis

There is no difference in the DMF and OHI indexes between the Down syndrome and normal children.

Material and methods

It was a cross-sectional, observational clinical study with a sample size of 200 subjects. The control group consisted of 100 subjects aged

Correspondence to: Haifaa Al-damri, Riyadh Colleges of Dentistry and Pharmacy, Saudi Arabia, E-mail: hayfa.t.aldamre@student.riyadh.edu.sa

Received: June 20, 2017; **Accepted:** July 21, 2017; **Published:** July 24, 2017

between 8 and 12 who were randomly selected and examined at an elementary public school in Riyadh. Whereas the research group consisted of 100 subjects Down Syndrome children aged between 8 and 12. These subjects were examined at DSCA Center, Saudi Center for Down syndrome, and Saut Society in Riyadh.

Four students from RCDP participated in the examination of the children as undergraduate research project. Oral examination was carried out by the researches on a regular chair using regular examination instruments (mouth mirror, and dental explorer).

The study included oral hygiene index (OHI), which is a combination of Plaque Index and Calculus Index, to measure the (OHI). We divided each arch into three segments and measured the calculus and plaque on the buccal and lingual surfaces of each segments of both arches. The segment was represented by the tooth that showed the highest reading. After collecting all the data, we calculated the values. We added up all the values we got from plaque index, then we divided them by the total number of tooth surfaces in each segment. After that, we calculated the calculus index in the same way Greene *et al.* Then, we added up both values. Decayed-Missing-Filled index (DMF) or Decayed-Missing-Filled Teeth (DMFT) index was used to assess dental caries prevalence and dental treatment needed among the subjects. This index was recorded by the examination of individuals using dental examination kits and counting the number of decayed, missing, due to caries, and restored teeth [6].

Statistical analysis

All data were analyzed by Excel software using the Student's T-test.

Results

There was no statistical difference between any of the parameters in control and study group. The results were calculated at 95% confidence level (P value = 0.05) (Figures 1-4)

Discussion

Down Syndrome children showed friendly cooperative behavior during the study comparable to normal children. Seven Down Syndrome were excluded as they refused to open their mouths for screening. No such restriction was there when examining the children in the control group.

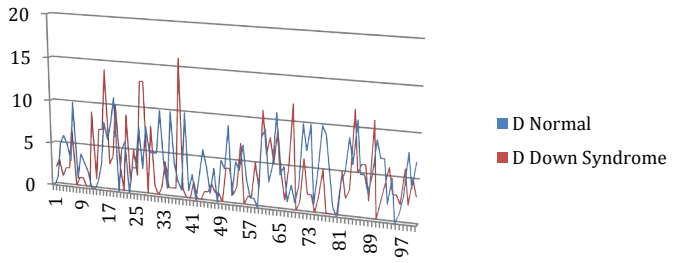

Figure 1. D= 0.059 at 95% confidence level (P value = 0.05)

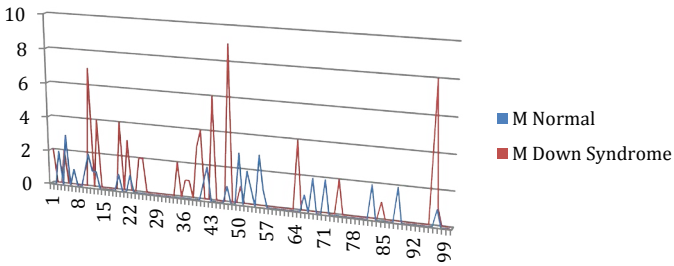

Figure 2. M=0.090 at 95% confidence level (P value = 0.05)

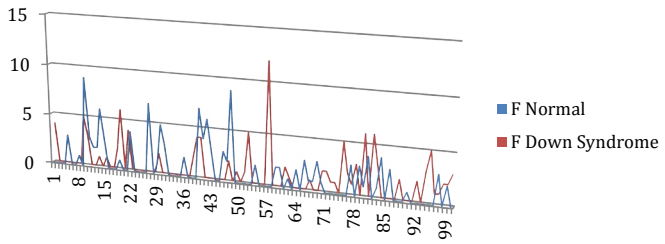

Figure 3. F=0.65 at 95% confidence level (P value = 0.05)

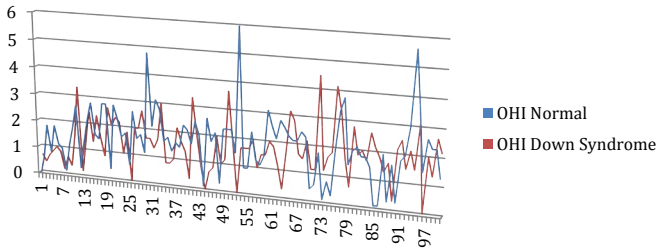

Figure 4. OHI=0.098 at 95% confidence level (P value = 0.05)

A number of similar studies have reported the results comparable to our study [7-9].

Recently two literature review articles reviewed more than 226 similar studies. They reported that some studies showed decreased incidences of caries in Down Syndrome subjects but either the results were not statistically significant or there was no strong scientific evidence. Similarly, some studies have reported higher incidences of gingivitis and periodontitis in Down Syndrome subjects compared to the normal population and once again either the results were not statistically significant or there was no strong scientific evidence [9,10]

Our results have shown that even with decreased learning ability the Down Syndrome subjects were able to have their oral hygiene and caries indexes similar to the control group. This is perhaps because the parents as well as the staff in the institutions are managing these children well.

The studies that reported higher prevalence of gingivitis and periodontitis may be related to a different age group. We did not have such incidences as we studied children aged between 8 and 12; no adults were part of our study [11,12].

Conclusion

No statistically significant difference was observed in the DMF index between the Down Syndrome subjects and subjects in the control group.

No statistically significant difference was observed in the OHI between the Down Syndrome subjects and subjects in the control group.

Our study here in Riyadh showed similar results to other studies done in other countries.

Reference

1. McDonald ER, Avery RD, Dean AJ (2011) Dentistry for the Child and Adolescent. Maryland Heights, Missouri: Mosby Elsevier.
2. Niazi MA, Al-Mazyad AS, Al-Husain MA, Al-Mofada SM, Al-Zamil FA, et al. (1995) Down's Syndrome in Saudi Arabia: Incidence and Cytogenetics. *Hum Hered 45*(2): 65-69. [Crossref]
3. Mutchinick O, Lisker R, Babinsky V (1991) Risk for Down syndrome based on maternal ages grouped in intervals of 2 and 5 years in the Mexican population. *Bol Med Hosp Infant Mex 48*(8): 534-537. [Crossref]
4. Chen H (2015) Down syndrome. Medscape. http://emedicine.medscape.com/article/943216-overview#a1
5. Munir K (n. d.) What are the major health related concerns in persons with down syndrome. National Down Syndrome Society. http://www.ndss.org/Resources/Health-Care/Associated-Conditions/Mental-Health-Issues--Down-Syndrome/
6. Broadbent JM, Thomson WM (2005) For debate: problems with the DMF index pertinent to dental caries data analysis. *Community Dent Oral Epidemiol 33*(6): 400-409. [Crossref]
7. Krishnan CS, Archana A (2014) Evaluation of Oral Hygiene Status and Periodontal Health in Mentally Retarded Subjects with or without Down's Syndrome in Comparison with Normal Healthy Individuals. Journal of Oral Health & Community dentistry *8*(2): 91-94.
8. López-Pérez R, Borges-Yáñez SA, Jiménez-García G, Maupomé G (2002) Oral hygiene, gingivitis, and periodontitis in persons with Down syndrome. *Spec Care Dentist 22*(6): 214-220. [Crossref]
9. Moreira MJS, Schwertner C, Jardim JJ, Hashizume LN (2016) Dental caries in individuals with Down syndrome: a systematic review. International Journal of Paediatric Dentistry 26(1): 3-12.
10. Deps TD, Angelo GL, Martins CC, Paiva SM, Pordeus IA, et al. (2015) Association between Dental Caries and Down Syndrome: A Systematic Review and Meta-Analysis. *PLoS ONE* 10(6). [Crossref]
11. Barnett ML, Press KP, **Friedman D**, **Sonnenberg EM** (1986) The prevalence of periodontitis and dental caries in a Down's syndrome population. *J Periodontol* 57(5): 288-93. **[Crossref]**
12. Carranza AF, Klokkevold RP, Takei HH, Newman GM (2012) Carranza's Clinical Periodontology. St. Louis, Missouri: Elsevier.