International Journal of Early Childhood Special Education (INT-JECSE)
DOI:10.9756/INTJECSE/V14I5.744 ISSN: 1308-5581 Vol 14, Issue 05 2022

COMPARISON OF ORAL HEALTH STATUS BETWEEN CHILDREN WITH SPECIAL NEEDS AND NORMAL CHILDREN

- **Nor Syakirahbinti Shahroom, BDS**

Saveetha Dental College and Hospitals,Saveetha Institute of Medical and Technical Sciences, Saveetha University,Chennai, India.Mail Id: 151501091.sdc@saveetha.com

- **Jessy P, MDS***

Assistant Professor, Department of Pedodontics,Saveetha Dental College and Hospitals,Saveetha Institute of Medical and Technical Sciences,Saveetha University,Chennai, India.Mail Id: jessyp.sdc@saveetha.com

- **Iffat Nasim, MDS**

Professor & HOD,Department of Conservative Dentistry and Endodontics,Saveetha Dental College and Hospitals,Saveetha Institute of Medical and Technical Sciences,Saveetha University,Chennai, India.Mail Id: iffatnasim@saveetha.com

ABSTRACT

Objectives- To assess and compare the oral health status of children with special needs and normal children.

Materials and method- A retrospective study was conducted in a private dental hospital from July 2019 till March 2020. Twenty-eight children with special needs and thirty normal children of the age range of 13-17 years age group were selected for the study. Oral hygiene index-simplified (OHI-S), gingival index, plaque index and decayed, missing and filled teeth (DMFT) were recorded. Data were analyzed using an independent t-test.

Results- Overall results revealed thatthe mean score OHI-S, plaque score, gingival score and DMFT of the children with special needs group were higher when compared to normal children. There was a statistical significant difference in DMFT among normal children and children with special needs ($p<0.05$) also significant difference in plaque score, gingival index score and oral hygiene score was noticed between normal and special children($p<0.05$).

Conclusion- It can be concluded that children with special needs had poor oral health status compared to normal children. Dental health education concerning dietary behaviour, regular dental visits and preventive measures should be reinforced and the supervision of oral health needs to be strengthened.This study provides information regarding the oral health status of special needs children. A holistic approach is needed from all specialists to achieve satisfactory oral health for special needs children.

Keywords: Children With Special Needs; Dental Caries; Disability; Oral Health Status,Innovation

INTRODUCTION

Maintenance of oral health is important as it may affect one's communication and appearance. This practice should be initiated at the earliest and parents should play an important role in their children's oral health. In India, 40% of the growing population is children [1]. However, due to poor and lack of dental health services especially in rural areas, most of the children were unable to receive the health care they need [2].

Children with special healthcare needs (SHCN) represent a high-risk group for dental disease. Due to unattended healthcare needs, they may have more marked oral pathologies such as dental caries and periodontal diseases [3–5]. Their actual disability, medical, economic and social reasons, the difficulty faced by parents in maintaining oral hygiene may be the reasons why children with special needs have poor oral health status [6]. Besides, due to their disability, they may have not had the ability to understand, assume responsibility for or cooperate during treatment [7–9]. Moreover, oral diseases can have a direct impact on the health of children and adolescents with systemic health conditions [1,10,11].

Children with disabilities may be physically, mentally and socially challenged [12]. The Maternal and Child Health Bureau (MCHB) has defined children and adolescents with SHCN as those "who have or are at increased risk for a chronic physical, developmental, behavioral, or emotional condition and who require health and related services of a type or amount beyond that required by children generally [6]." The American Academy of Pediatric Dentistry (AAPD) defines special health care needs as "any physical, developmental, mental, sensory, behavioral, cognitive, or emotional impairment or limiting condition that requires medical management, health care intervention, and/or use of specialized services or programs" [13]. According to WHO, 10% of the population in developed countries and 12% of the population in developing countries are individuals with disabilities [14].

Our team has extensive knowledge and research experience that has translate into high quality publications[15–35] .There were various studies documented in the oral health status of children with special needs. Most of the studies reported that children with special needs have poor oral health status [1,3,36–38]. Bharathi et al reported that special children were more prevalent in malocclusion, poor periodontal status and dental caries [1]. As there is little literature

available on oral health status in the south indianpopulation , this study was aimed to assess and compare the oral health status of children with special needs and normal children.

MATERIALS AND METHOD

This was a retrospective study involving pediatrics patients visiting a dental hospital from July 2019 till March 2020. Ethical approval for this study was granted by the Institutional Ethical Committee with ethical approval number SDC/SIHEC/2020/DIASDATA/0619-0320.

Data were collected based on the records of the patients. Patients' records of about 5,000 were reviewed and analyzed. Children with special needs groups included children irrespective of genders and age range of 13-17 years old with various disabilities such as autism, attention deficit and hyperactive disorder (ADHD), down's syndrome, hearing and speech disability, visual disability and intellectual disability whose oral hygiene index, plaque index, DMFT index, gingival index were present in the records were selected. Patients with other medical conditions were excluded from the study for both the groups. Hence, overall twenty eight special children and thirty two normal children were selected who fall under the age between 13 to 17 years fulfilling the above criteria. Simple random sampling was done for normal children.

Sociodemographic data such as age and gender, OHI-S score, plaque score, gingival score and DMFT were obtained from the records of those patients. To minimize bias, the data were verified by the second reviewer and cross verification with photographs was done. The oral health status of the children was analyzed based on their first dental visit. Oral hygiene status was assessed using oral hygiene index-simplified (OHI-S) of Greene and Vermillion. Scoring of OHI-S can be divided into 0-1.2 (good), 1.3-3.0 (fair) and 3.0-6.0 (poor) [39]. The thickness of plaque in the cervical area of the teeth was checked to calculate the plaque index of Loe H and Silness P [40]The scoring of plaque index can be divided into 0 (excellent). 0.1-0.9 (good), 1.0-1.9 (fair) and 2.0-3.0 (poor). Gingival index by Loe H and Silness P was assessed by examining the qualitative changes of gingival tissues [41]. Scoring of gingival index can be divided into 0.1-1.0 (mild gingivitis), 1.1-2.0 (moderate gingivitis) and 2.1-3.0 (severe gingivitis). Dental caries was assessed by using the World Health Organization (WHO) criteria 2013 in which D– decayed, M – missing, F – filled [42].The obtained data were analyzed using Statistical Package for Social Sciences SPSS Version 20. Independent t-test was used to determine the significant difference between children with special needs group and normal group and the p-value was set at less than 0.05 to be considered significant.

RESULTS

The children were divided into two groups, group 1, children with special health care needs and the other group 2 as normal children. There were thirty normal children and twenty-eight children with special needs. The mean, standard deviation of OHI-S score, plaque score, gingival score and DMFT for both group 1 and group 2 were represented in (Table 1).

The mean OHI-S of the children with special needs group was 1.04±0.48, while normal children was 0.76±0.34. A group-wise comparison of the OHI-S score found a statistically significant difference between the two groups ($p<0.05$). Based on Figure 1, 20 (50%) of normal children had a good OHI-S score, 10 (62.5%) with fair and none with poor OHI-S score compared to children with special needs group, 19 (50%) had good OHI-S score, 7 (37.5%) had fair and 2 (100%) had poor OHI-S score respectively as shown in (Figure 1).

The mean plaque score of the children with special needs group was 0.95±0.44, while normal children was 0.65±0.43 which was statistically significant ($p<0.05$) between the two groups (Figure 2). As per the Silness and Loe plaque index, excellent scores 1 (100%) and good scores 17 (54.8%) were higher in the normal children group compared to children with special needs group with 0 (0%) and 14 (45.2%) respectively. Fair score 13 (52%) and poor score 1 (100%) were higher in children with special needs group compared to normal children group with 12 (48%) and 0 (0%) respectively.

The mean gingival score of the children with special needs group was 1.19±0.44, while in the normal children group was 0.85±0.46. The group comparison of the gingival score found to be a statistically significant difference ($p<0.05$).Based on the gingival index score as shown in (Figure 3), mild gingivitis was higher in normal children group 18 (64.2%) compared to children with special needs group 10 (35.6%). Moderate gingivitis was higher in children with special needs group 18 (60%) compared to the normal children group 12 (40%).

The mean DMFT score of the children with special needs group was 6.82±5.62, while in the normal children group was 3.03±3.09 which found a statistically significant difference between the two groups ($p<0.05$). Based on the DMFT score as shown in (Figure 4), normal children group with a DMFT score of 0-10 10 (76.9%) was higher compared to children with special needs group 3 (23.1%). Meanwhile, the DMFT scores of 11-20 and 20-27 were higher in children with special needs group with 18 (55%) and 7 (58%) compared to the normal children group with 15 (45%) and 5 (42%) respectively.

DISCUSSION

In this present study, the mean OHI-S score was greater in children with special needs compared to normal children. Similarly, in the study done by Amit Sharma et al, special children had a greater OHI-S mean score (1.51±0.93) compared to normal children (1.15 ± 0.72) [36]. In a study done by Sinha, Nidhi et al, cerebral palsy children had a greater OHI-S mean score in which only 30% of them had good oral hygiene [37]. Manish Jain et al reported that the overall oral hygiene status of mentally disabled children was poor in which 18.7% of them had a good score, 44% had a fair score and 37.3% had a poor score [43]. In a previous study done by Shaw L et al, the overall oral hygiene status of hearing-impaired children was good in which 69% had a good score, 29% had a fair score and only 2% had a poor score

[44]. Children with special needs had poor oral hygiene maintenance due to difficulty in tooth brushing [45]. Besides, they will experience greater challenges due to a lack of basic manual skills and intellectual disabilities that precludes adequate practice [46,47].

In this present study, the mean plaque index score was greater in children with special needs compared to normal children. Similarly, Solanki et al reported that one in three subjects of the study population presented with heavy plaque accumulation [48]. In the study done by El-Khatib et al, the mean plaque index score in the autism spectrum disorder group (2.02±0.73) was higher compared to healthy children (1.40±0.80) [49]. Due to the difficulty in maintaining oral hygiene and brushing, there will be an increase in plaque accumulation. Therefore, specially designed toothbrushes have been developed such as triple-headed brush which is recommended for individuals with limited manual skills [50].

The mean gingival index score of the present study was greater in children with special needs compared to normal children. Similarly, in the study done by El-Khatib et al, the gingival index score in autism spectrum disorder group (2.00±0.73) was higher compared to healthy children (1.40±0.40) and in the study done by Jaber M.A et al, children with autism had significantly more generalized gingivitis compared to normal children [49,51]. On the contrary, Kumar et al reported that the mean gingival score for normal children is greater than visually impaired children [38]. A chewable brush was found to be effective to help in maintaining good oral hygiene by significantly reduce the plaque and debris and also the potential risk of dental caries [52].

In the present study, the mean DMFT score was greater in children with special needs compared to normal children. In accordance with previous studies, the mean DMFT was higher in children with special needs compared to normal children[[1,36,37]. In the study done by Bakarčić et al, the mean DMFT of the disabled children and healthy children were 6.39 and 4.76 respectively which was corresponding with the present study [53]. Frequent consumption of sugary and sweetened snacks with less frequent brushing may increase the likelihood of caries initiation which may cause the teeth to be filled or restored [1]. Early childhood caries may be prevalent among children with special needs which can cause a great impact on their quality of life if not treated at the earliest [54–56]. Fluoride with optimal quantities is known to prevent caries [57,58].

The disabled and handicapped form a substantial section of the community. The effects of disabling conditions are many and varied. Children with physical disabilities come under a group called the “special needs population”. They have little knowledge about their oral health; also experience considerably higher levels of dental diseases and also more difficulty for accessing oral health care. The three principle components – impairment, disability and handicap – would operate independently, with impairment addressing impact on the body, disability to impact on the person and handicap to impact on the person interacting with the environment. Oral disease represents a major health problem among individuals with disabilities. The prevalence and severity of oral disease among this group are higher when compared to the general population.

Relatively lower proportions of awareness on dental health knowledge and lower proper practice of dental health behavior have been observed among special children compared with the control group. Therefore, we can conclude that children with special needs require urgent attention to oral hygiene maintenance and necessary treatment. In order to improve the oral health status of the children with special needs, parents should play an important role by reaching out to the dentist at the earliest for consultation regarding proper oral hygiene practice for their children [59–61]. Through this, they will have adequate knowledge and awareness of oral health education. A study reported that there was a positive parents’ attitude regarding the importance of dental visits among special children and parents with low education are in need of guidance and knowledge [62].

Increased dental school training and continuing education programmes are needed to meet these children for proper training and practical support from experience in dental health to train these disabled children. Chemical plaque control has been recommended as alternative and adjunctive to mechanical plaque control in these special patient groups.If good oral health is to become a reality in the future for people with special needs it is essential that people in daily contact with the individuals become involved in oral care. With an increasing number of people with special needs, the oral health fraternity should actively involve other parts of the community to bring about general and social wellbeing and benefit them with sustained lifetime oral health. The limitation of the study was the small sample size of children with special needs. Extensive research required considering the larger population.

CONCLUSION

Within the limit of the study, children with special needs had a poor oral health status compared to normal children. The following mean index scores DMFT, oral hygiene index, gingival and plaque index scores were found to be higher in children with special needs when compared to the normal children. Teenagers belonging to the disability groups inculcate habits under the influence of surroundings capability and interest of parents and caretakers. The impairment leads to disability, and deprivation of these groups resulted in poor oral hygiene and subsequent oral diseases. A holistic approach is needed from all specialists to achieve satisfactory oral health in these subjects. In addition, the oral hygiene habits of individuals with disabilities can be improved by close monitoring and periodic dental checkups. Constant motivation of the parents and caretakers to comply with the demands of the treatment and necessary training of the dental team in matters of behavior management and treatment strategies is needed. Dental health education concerning dietary behavior and preventive programs to the special children parents should be reinforced and the supervision of oral health behavior needs to be strengthened.

ACKNOWLEDGEMENT

We thank Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai for the research support.

REFERENCE

1. Purohit BM, Acharya S, Bhat M. Oral health status and treatment needs of children attending special schools in South India: a comparative study. Spec Care Dentist. 2010 Nov;30(6):235–41.
2. India RG. Sample Registration System Statistical Report 2005. Report No. 1 of 2006; 2006.
3. Mehta A, Gupta R, Mansoob S, Mansoori S. Assessment of oral health status of children with special needs in Delhi, India. RSBO RevistaSul-Brasileira de Odontologia. 2015;12(3):239–46.
4. Packiri S, Gurunathan D, Selvarasu K. Management of Paediatric Oral Ranula: A Systematic Review. J ClinDiagn Res. 2017 Sep;11(9):ZE06–9.
5. Christabel SL, Gurunathan D. Prevalence of type of frenal attachment and morphology of frenum in children, Chennai, Tamil Nadu. World J Dent. 2015;6(4):203–7.
6. McPherson M, Arango P, Fox H, Lauver C, McManus M, Newacheck PW, et al. A new definition of children with special health care needs. Pediatrics. Am Acad Pediatrics; 1998 Jul;102(1 Pt 1):137–40.
7. Dharmani CKK. Management of children with special health care needs (SHCN) in the dental office. Journal of Medical Society. 2018 Jan 1;32(1):1.
8. Nair M, Jeevanandan G, Vignesh R, Subramanian EMG. Comparative evaluation of post-operative pain after pulpectomy with k-files, kedo-s files and mtwo files in deciduous molars -a randomized clinical trial. Brazilian Dental Science. 2018 Oct 24;21(4):411–7.
9. Govindaraju L, Jeevanandan G, Subramanian E. Clinical Evaluation of Quality of Obturation and Instrumentation Time using Two Modified Rotary File Systems with Manual Instrumentation in Primary Teeth. J ClinDiagn Res. 2017 Sep;11(9):ZC55–8.
10. Govindaraju L, Jeevanandan G, Subramanian EMG. Knowledge and practice of rotary instrumentation in primary teeth among indian dentists: A questionnaire survey. Journal of International Oral Health. 2017 Mar 1;9(2):45.
11. Jeevanandan G. Kedo-S Paediatric Rotary Files for Root Canal Preparation in Primary Teeth - Case Report. J ClinDiagn Res. 2017 Mar;11(3):ZR03–5.
12. Park K. Park's textbook of preventive and social medicine. Preventive Medicine in Obstet, Paediatrics and Geriatrics [Internet]. 2005; Available from: https://ci.nii.ac.jp/naid/10021929774/
13. Baykan Z. Causes and prevention of disabilities, handicaps, and defects. SA J Contin Med Educ. 2003;9:336–8.
14. American Academy of Pediatric Dentistry. Council on Clinical Affairs. Guideline on management of dental patients with special health care needs. Pediatr Dent. 2012 Sep;34(5):160–5.
15. Sekar D, Auxzilia PK. Letter to the Editor: H19 Promotes HCC Bone Metastasis by Reducing Osteoprotegerin Expression in a PPP1CA/p38MAPK-Dependent Manner and Sponging miR-200b-3p [Internet]. Vol. 74, Hepatology. 2021. p. 1713–1713. Available from: http://dx.doi.org/10.1002/hep.31719
16. Vignesh R, Sharmin D, Rekha CV, Annamalai S, Baghkomeh PN. Management of Complicated Crown-Root Fracture by Extra-Oral Fragment Reattachment and Intentional Reimplantation with 2 Years Review. ContempClin Dent. 2019 Apr;10(2):397–401.
17. Rajagopal R, Padmanabhan S, Gnanamani J. A comparison of shear bond strength and debonding characteristics of conventional, moisture-insensitive, and self-etching primers in vitro. Angle Orthod. 2004 Apr;74(2):264–8.
18. Happy A, Soumya M, Venkat Kumar S, Rajeshkumar S, Sheba RD, Lakshmi T, et al. Phyto-assisted synthesis of zinc oxide nanoparticles using Cassia alata and its antibacterial activity against Escherichia coli. BiochemBiophys Rep. 2019 Mar;17:208–11.
19. Neelakantan P, Sharma S, Shemesh H, Wesselink PR. Influence of Irrigation Sequence on the Adhesion of Root Canal Sealers to Dentin: A Fourier Transform Infrared Spectroscopy and Push-out Bond Strength Analysis. J Endod. 2015 Jul;41(7):1108–11.
20. Teja KV, Ramesh S. Is a filled lateral canal - A sign of superiority? J Dent Sci. 2020 Dec;15(4):562–3.
21. Jose J, P. A, Subbaiyan H. Different Treatment Modalities followed by Dental Practitioners for Ellis Class 2 Fracture – A Questionnaire-based Survey [Internet]. Vol. 14, The Open Dentistry Journal. 2020. p. 59–65. Available from: http://dx.doi.org/10.2174/1874210602014010059
22. Patil SB, Durairaj D, Suresh Kumar G, Karthikeyan D, Pradeep D. Comparison of Extended Nasolabial Flap Versus Buccal Fat Pad Graft in the Surgical Management of Oral Submucous Fibrosis: A Prospective Pilot Study [Internet]. Vol. 16, Journal of Maxillofacial and Oral Surgery. 2017. p. 312–21. Available from: http://dx.doi.org/10.1007/s12663-016-0975-6
23. Marofi F, Motavalli R, Safonov VA, Thangavelu L, Yumashev AV, Alexander M, et al. CAR T cells in solid tumors: challenges and opportunities. Stem Cell Res Ther. 2021 Jan 25;12(1):81.
24. Prasad SV, Vishnu Prasad S, Kumar M, Ramakrishnan M, Ravikumar D. Report on oral health status and treatment needs of 5-15 years old children with sensory deficits in Chennai, India [Internet]. Vol. 38, Special Care in Dentistry. 2018. p. 58–9. Available from: http://dx.doi.org/10.1111/scd.12267
25. Kushali R, Maiti S, Girija SAS, Jessy P. Evaluation of Microbial Leakage at Implant Abutment Interfact for Different Implant Systems: An In Vitro Study. J Long Term Eff Med Implants. 2022;32(2):87–93.

26. Aparna J, Maiti S, Jessy P. Polyether ether ketone - As an alternative biomaterial for Metal Richmond crown-3-dimensional finite element analysis. J Conserv Dent. 2021 Nov;24(6):553–7.
27. Ponnanna AA, Maiti S, Rai N, Jessy P. Three-dimensional-Printed Malo Bridge: Digital Fixed Prosthesis for the Partially Edentulous Maxilla. ContempClin Dent. 2021 Oct;12(4):451–3.
28. Kasabwala H, Maiti S, Ashok V, Sashank K. Data on dental bite materials with stability and displacement under load. Bioinformation. 2020 Dec 31;16(12):1145–51.
29. Agarwal S, Maiti S, Ashok V. Correlation of soft tissue biotype with pink aesthetic score in single full veneer crown. Bioinformation. 2020 Dec 31;16(12):1139–44.
30. Rupawat D, Maiti S, Nallaswamy D, Sivaswamy V. Aesthetic Outcome of Implants in the Anterior Zone after Socket Preservation and Conventional Implant Placement: A Retrospective Study. J Long Term Eff Med Implants. 2020;30(4):233–9.
31. Asokan S, John JB, Janani D, Jessy P,Kavya S, Sharma K. Attitudes of students and teachers on cheating behaviors: descriptive cross-sectional study at six dental colleges in India. J Dent Educ. 2013 Oct;77(10):1379–83.
32. Faiz N, Maiti S, Nasim I, Jessy P. High Frenal Attachment - As a risk Factor of Midline Diastema [Internet]. Vol. 11, International Journal of Research in Pharmaceutical Sciences. 2020. p. 379–84. Available from: http://dx.doi.org/10.26452/ijrps.v11ispl3.2948
33. Faiz N, Maiti S, Nasim I, Jessy P. Prevalence of outflow of patients for esthetic rehabilitation through the maxillofacial surgical procedure - A retrospective study [Internet]. Vol. 11, International Journal of Research in Pharmaceutical Sciences. 2020. p. 1464–9. Available from: http://dx.doi.org/10.26452/ijrps.v11ispl3.3454
34. Agarwal S, Ashok V, Maiti S. Open- or Closed-Tray Impression Technique in Implant Prosthesis: A Dentist's Perspective. J Long Term Eff Med Implants. 2020;30(3):193–8.
35. Merchant A, Ganapathy DM, Maiti S. Effectiveness of local and topical anesthesia during gingival retraction [Internet]. Vol. 25, Brazilian Dental Science. 2022. p. e2591. Available from: http://dx.doi.org/10.4322/bds.2022.e2591
36. Sharma A, Todkar M, Pandya H, Panwar M, Das M. Comparison of oral health status and DMFT score of special children and normal children in Burhanpur city. 2019; Available from: http://www.oraljournal.com/pdf/2019/vol5issue1/PartD/5-1-30-379.pdf
37. Sinha N, Singh B, Chhabra KG, Patil S. Comparison of oral health status between children with cerebral palsy and normal children in India: A case-control study. J Indian SocPeriodontol. 2015 Jan;19(1):78–82.
38. Kumar S, Tyagi R, Kalra N, Khatri A, Khandelwal D, Kumar D. Comparison of dental health, treatment needs in visually impaired and normal healthy school-going children of 6–14-year age group. Saudi Journal of Oral Sciences. 2020 Jan 1;7(1):46.
39. Greene JG, Vermillion JR. The simplified oral hygiene index. J Am Dent Assoc [Internet]. 1964; Available from: https://jada.ada.org/article/S0002-8177(64)81004-7/abstract
40. Silness J, Loe H. PERIODONTAL DISEASE IN PREGNANCY. II. CORRELATION BETWEEN ORAL HYGIENE AND PERIODONTAL CONDTION. ActaOdontol Scand. 1964 Feb;22:121–35.
41. Loe H, Silness J. PERIODONTAL DISEASE IN PREGNANCY. I. PREVALENCE AND SEVERITY. ActaOdontol Scand. 1963 Dec;21:533–51.
42. World Health Organization. Oral Health Surveys: Basic Methods. World Health Organization; 2013. 125 p.
43. Jain M, Mathur A, Sawla L, Choudhary G, Kabra K, Duraiswamy P, et al. Oral health status of mentally disabled subjects in India. J Oral Sci. 2009 Sep;51(3):333–40.
44. Shaw L, Maclaurin ET, Foster TD. Dental study of handicapped children attending special schools in Birmingham, UK. Community Dent Oral Epidemiol. 1986 Feb;14(1):24–7.
45. Botti Rodrigues dos Santos MT, Masiero D, Novo NF, Simionato MRL. Oral Conditions in Children with Cerebral Palsy. J Dent Child. 2003;70(1):40–6.
46. Dds PG, Miller CE. Preventing dental disease for people with special needs: the need for practical preventive protocols for use in community settings. Spec Care Dentist. 2003 Sep;23(5):165–7.
47. Anaise JZ. Periodontal disease and oral hygiene in a group of blind and sighted Israeli teenagers (14--17 years of age). Community Dent Oral Epidemiol. 1979;7(6):353–6.
48. Solanki J, Gupta S, Arora G, Bhateja S. Prevalence of Dental Caries and Oral Hygiene Status Among Blind School Children and Normal Children, Jodhpur City: A Comparative Study. Journal of Advanced Oral Research. 2013 May 1;4(2):1–5.
49. El Khatib AA, El Tekeya MM, El Tantawi MA, Omar T. Oral health status and behaviours of children with Autism Spectrum Disorder: a case--control study. Int J Paediatr Dent. 2014;24(4):314–23.
50. Doğan MC, Alaçam A, Aşici N, Odabaş M, Seydaoğlu G. Clinical evaluation of the plaque-removing ability of three different toothbrushes in a mentally disabled group. ActaOdontol Scand. 2004 Jan 1;62(6):350–4.
51. Jaber MA. Dental caries experience, oral health status and treatment needs of dental patients with autism. J Appl Oral Sci. 2011 May;19(3):212–7.
52. Govindaraju L, Gurunathan D. Effectiveness of Chewable Tooth Brush in Children-A Prospective Clinical Study. J ClinDiagn Res. 2017 Mar;11(3):ZC31–4.
53. Bakarčić D, Katalinić A, Szirovicza L. Dental caries in disabled children. Coll Antropol [Internet]. 2007; Available

from: https://hrcak.srce.hr/file/43160
54. Subramanyam D, Gurunathan D, Gaayathri R, Vishnu Priya V. Comparative evaluation of salivary malondialdehyde levels as a marker of lipid peroxidation in early childhood caries. Eur J Dent. 2018 Jan;12(1):67–70.
55. Jeevanandan G, Govindaraju L. Clinical comparison of Kedo-S paediatric rotary files vs manual instrumentation for root canal preparation in primary molars: a double blinded randomised clinical trial. Eur Arch Paediatr Dent. 2018;19(4):273–8.
56. Panchal V,Jeevanandan G, Subramanian EMG, Others. Comparison of instrumentation time and obturation quality between hand K-file, H-files, and rotary Kedo-S in root canal treatment of primary teeth: A randomized controlled trial. J Indian SocPedodPrev Dent. 2019;37(1):75.
57. Somasundaram S, Ravi K, Rajapandian K, Gurunathan D. Fluoride Content of Bottled Drinking Water in Chennai, Tamilnadu. J ClinDiagn Res. 2015 Oct;9(10):ZC32–4.
58. Mahesh R MM. Fluoride, fluoridated toothpaste efficacy and its safety in children - Review. International Journal of Pharmaceutical Research. 2018;10(4):109–14.
59. Gurunathan D, Shanmugaavel AK. Dental neglect among children in Chennai. J Indian SocPedodPrev Dent. 2016 Oct;34(4):364–9.
60. Ravikumar D, Jeevanandan G, Subramanian EMG. Evaluation of knowledge among general dentists in treatment of traumatic injuries in primary teeth: A cross-sectional questionnaire study. Eur J Dent. 2017 Apr;11(2):232–7.
61. Govindaraju L, Jeevanandan G, Subramanian EMG. Comparison of quality of obturation and instrumentation time using hand files and two rotary file systems in primary molars: A single-blinded randomized controlled trial. Eur J Dent. 2017;11(03):376–9.
62. Wyne AH. Attitude of parents of disabled children towards dental visits in Riyadh, Saudi Arabia. Odontostomatol Trop. 2007 Jun;30(118):17–23.

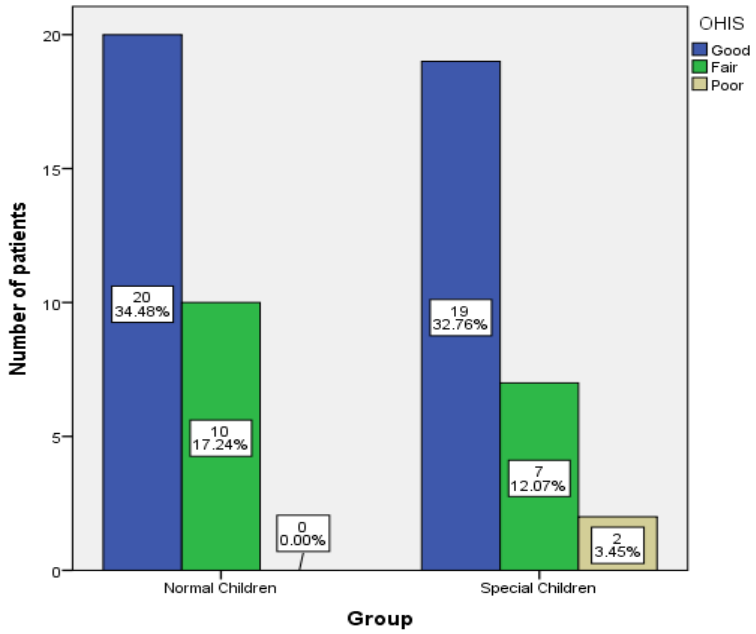
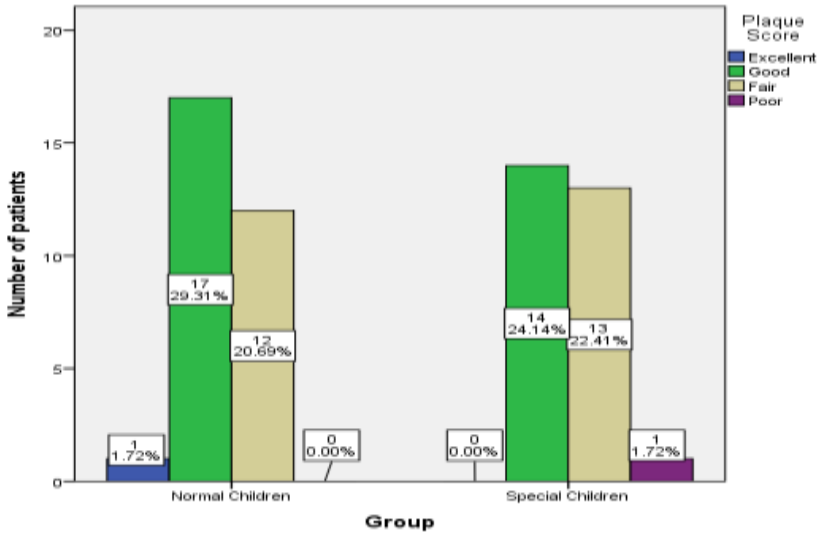


Figure 1:*The bar chart showing the OHI-S score for normal children and special children. X-axis represents the group of children and the Y-axis represents the number of patients (blue - good score, green - fair score and light yellow - poor score). Independent t-test shows there is a significant association between OHI scores of normal and special children, p=0.011(<0.05) which denotes statistically significant. There was an increase in OHI-S score in special children (3.45% poor score) compared to normal children.*

Figure 2:*The bar chart showing the plaque index score for normal children and special children. X-axis represents the group of children and the Y-axis represents the number of patients (blue - excellent, green - good, light yellow - fair and purple - poor). Independent t-test shows there is a significant association between plaque score of normal and special children, p-value=0.009 (p<0.05) which denotes statistically significant. There was an increase in mean plaque scores in special children (1.72% poor score) compared to normal children.*



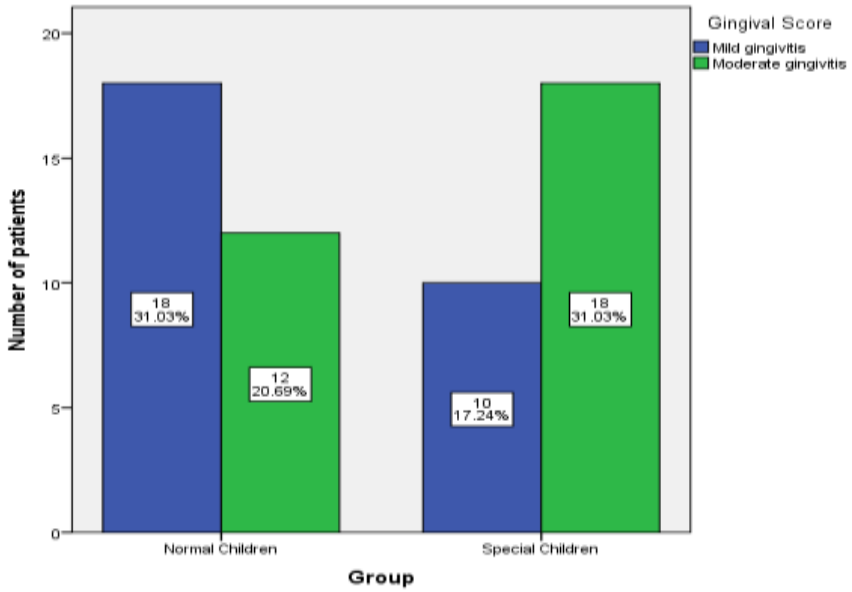
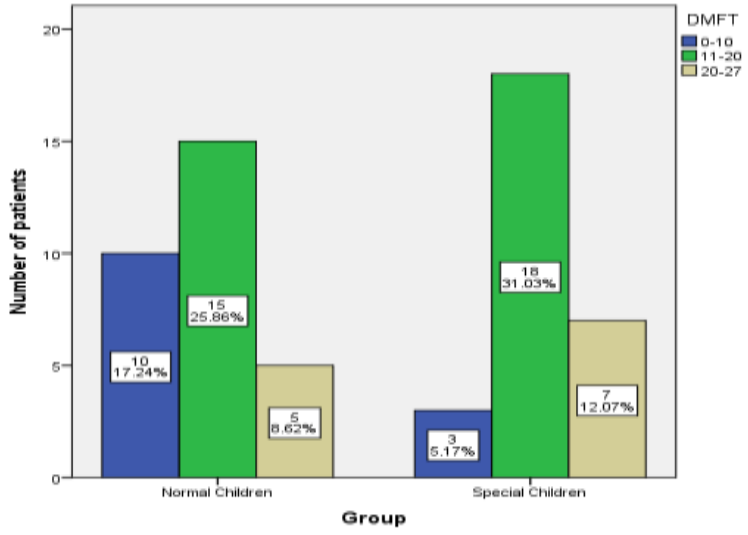


Figure 3: *The bar chart showing the gingival index score for normal children and special children. X-axis represents the group of children and the Y-axis represents the number of patients (blue - mild gingivitis and green - moderate gingivitis). Independent t-test shows there is a significant association between gingival score of normal and special children, p-value=0.005 (p<0.05) which denotes statistically significant. Moderate gingivitis (31.03%) was more common in special children than normal children.*

Figure 4: *The bar chart showing the DMFT score for normal children and special children. X-axis represents the group of children and the Y-axis represents the number of patients (blue - 0-10 score, green - 11-20 score and light yellow - 20-27 score). Independent t-test shows there is a significant association between DMFT score of normal and special*



children, p-value=0.007 (p<0.05) which denotes statistically significant. DMFT score was greater with the score of 20 and above in special children (12.07%) than normal children.

TABLES AND LEGENDS

Table 1: *Comparison of the mean and standard deviation of OHIS, plaque score, gingival score and DMFT for special children and normal children groups.The special children were found to have higher mean index scores when compared to normal children.*

	Group	N	Mean	Std. Deviation	Std. Error Mean	p-value
Oral hygiene index score	Normal Children	30	.760	.3369	.0615	.011*

	Special Children	28	1.043	.4780	.0903	
Plaque index Score	Normal Children	30	.650	.4297	.0785	.009*
	Special Children	28	.957	.4367	.0825	
Gingival index Score	Normal Children	30	.850	.4629	.0845	.005*
	Special Children	28	1.193	.4371	.0826	
DMFT index score	Normal Children	30	3.03	3.090	.564	.007*
	Special Children	28	6.32	5.618	1.062	

(* statistically significant)