

Evaluation of Oral Health Status of Children with Special Health Care Needs in Jodhpur District of India

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ABSTRACT

Aim: The aim of the study is to assess the prevalence of dental caries, oral hygiene status, deft and oral hygiene habits among the children 4-15 years of age requiring special health care needs in Jodhpur district from various special schools including government and NGO (non government organisation) schools.

Material and Method: An epidemiological study was conducted including 1047 children among them, 608 were males and 439 were females of 8 different schools for special schools to assess the prevalence of dental caries, oral hygiene status, deft, enamel opacities and oral hygiene habits among the children 4-15 years of age requiring special health care needs in Jodhpur district. A schedule for data collection was prepared before starting of the survey, official permission and informed consent was obtained from the parents or guardians, heads of the special schools, Department of Education, Jodhpur. The data was retrieved from pre-coded survey Performa to a excel format in computers. Descriptive statistics that included mean, standard deviation and percentages were calculated for each of the categories. Data were analyzed using Chi-square test and ANOVA test.

Result: Caries prevalence was higher in male handicapped children 24.45% (256) than females 21.49% (225) and the difference was statistically significant ($P < 0.05$). Based on the mode of cleaning teeth, those who clean their teeth by themselves, with other's help and under supervision have got prevalence dental caries 413(85.86%), 34(7.07%) and 34(7.07%) respectively. The overall oral hygiene status among study population was recorded as fair in 396, 336 in poor and 315 of the study population showed good oral hygiene status and oral hygiene status among different handicap groups was statistically significant < 0.001 . Regarding the mode of cleaning in different handicap groups, there has not been much difference between cleaning their teeth by themselves, or with other's help or under supervision, as majority of them had fair to good oral hygiene status. Dental caries prevalence of 54.22% was observed in children having good oral hygiene, 50% caries prevalence observed in children having fair oral hygiene, 57.85% prevalence among children having poor oral hygiene. The differences between oral hygiene status and caries prevalence was not significant, $\chi^2 = 3.69$, $P > 0.05$.

KEY WORDS

oral hygiene, treatment, children, status

INTRODUCTION

Oral health is an integral part of overall health in which oral cavity plays a vital role in the life of human beings, through functions like mastication, esthetics, phonetics, communication, emotional expressions as well linked to happiness and good general health and there is evidence that aesthetically acceptable and functionally adequate dentitions affect self-esteem, confidence and socialization. It is highly essential to safe guard oral health of all children from childhood otherwise poor oral health will lead to various dental diseases like dental caries, periodontal diseases which adversely affects the overall health^{1,2)}.

Most handicapped individuals start their life with teeth and gums that are as strong and healthy as those of the normal people. However, their diet, eating pattern, medication, physical limitations, lack of cleaning habits and attitudes of parents and health providers, all contribute to poor oral health of the handicapped³⁾.

Dental diseases are one of the common problems found in children.

Good oral hygiene is important to a normal child for proper mastication, digestion, appearance, speech and health, but it is even more important for handicapped children as some of them use mouth as a functional limb to manipulate a chair and to manipulate bite stick⁴⁾.

It is desirable to safe guard oral health of all children from their childhood. The education regarding upkeep of oral health should be given to growing children, both normal and handicapped, in addition occupation and speech therapy to the later⁵⁾. The prevention and treatment of the early stages of dental disease lie in the provision of self-care but this may be difficult for the special health care need (SHCN) children⁶⁾.

In recent years, there have been an increasing number of studies concerning the dental health of normal children. However, very little attention has been paid to the dental health of the handicapped children, who actually require special care and attention. These people cannot maintain proper oral hygiene and dental health as they are physically handicapped⁶⁾.

In many instances, a disabled child's oral hygiene care becomes the

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Table 1: SHOWING CARIES PREVALENCE AMONG HANDICAP GROUPS ACCORDING TO GENDER

Handicap Groups	Males	Caries Affected	Females	Caries Affected	Total M+F	Caries Affected
Blind	119 (11.36%)	54 (5.15%)	94 (8.9%)	43 (4.11)	213 (20.34%)	97 (9.27%)
Deaf and Dumb	185 (17.66%)	81 (7.73%)	145 (13.84%)	79 (7.54%)	330 (31.51%)	160 (15.28%)
Orthopedic Impaired	167 (15.95%)	64 (6.11%)	103 (9.83%)	57 (5.44%)	270 (25.78%)	121 (11.55%)
Mentally Retarded	68 (6.49%)	31 (2.96%)	49 (4.68%)	19 (1.81%)	117 (11.17%)	50 (4.77%)
Cerebral Palsy	8 (0.76%)	5 (0.48%)	5 (0.47%)	3 (0.28)	13 (1.24%)	8 (0.77%)
Multiple Disability	61 (5.82%)	21 (2.01%)	43 (4.10%)	24 (2.29%)	104 (9.93)	45 (4.30%)
Total	608 (58.07%)	256 (24.45%)	439 (41.92%)	225 (21.49%)	1047 (100%)	481 (45.94%)

Males v/s Female, $X^2 = 2.568$, $P < .05$ Significant.

Caries prevalence between handicap groups, $X^2 = 3.274$, $P < .001$ Highly Significant.

Table 2: CARIES PREVALENCE ACCORDING TO MODE OF CLEANING TEETH IN HANDICAP GROUPS

Handicap groups	Themselves	Other's help	Under supervision
	Caries affected	Caries affected	Caries affected
Blind	89 (21.54%)	2 (5.88%)	6 (17.64%)
Deaf and dumb	160 (38.74%)	0 (0.0%)	0 (0.0%)
Orthopedic Impaired	113 (27.36%)	8 (23.52%)	0 (0.0%)
Mentally Retarded	16 (3.87%)	21 (61.76%)	13 (38.23%)
Cerebral Palsy	1 (0.24%)	1 (2.94%)	6 (17.64%)
Multiple Disability	34 (8.23%)	2 (5.88%)	9 (26.47%)
Total	413 (100%)	34 (100%)	34 (100%)

Table 3: SHOWING DISTRIBUTION OF DMFT COMPONENTS AMONG HANDICAP GROUPS

Handicap Group	Decayed	Missing	Filled	DMFT	Mean DMFT+/- Sd
Blind	81 (25.15%)	08 (33.33%)	61 (41.21%)	150 (30.36%)	0.8+/- 1.3
Deaf and Dumb	96 (29.8%)	03 (12.5%)	35 (23.64%)	134 (27.12%)	1.2+/- 1.1
Orthopedic Impaired	72 (22.36%)	01 (4.16%)	17 (11.48%)	90 (18.21%)	1.4+/- 1.2
Mentally Retarded	28 (8.69%)	09 (37.5%)	14 (9.45%)	51 (10.32%)	1.6+/- 1.4
Cerebral Palsy	06 (1.86)	00 (0.0 %)	03 (2.02%)	09 (1.82%)	2.1+/- 1.7
Multiple Disability	39 (12.11%)	03 (12.5%)	18 (12.16%)	60 (12.14%)	1.1+/- 0.6
Total	322	24	148	494	1.0+/- 0.9

$F = 8.34$, $P < 0.05$, Significant.

responsibility of another person, generally a parent or guardian, many of whom are emotionally or intellectually incapable of dealing with the health problems of their less fortunate affiliates⁷.

When literature is reviewed, the majorities of studies agree on the poorer oral hygiene and increased severity of gingivitis and periodontitis in handicapped people. Some reports show a high caries experience in handicapped children, while other studies describe comparable or even lower disease levels. A higher proportion of untreated lesions in handicapped children compared to non-handicapped controls have been documented in many studies⁸.

A very few or no studies for the special group of handicapped children in various schools are available in this part of Jodhpur district. Since these handicaps live in special schools, knowing their problems regarding dental diseases, it will be easy to plan dental care for such groups in school campus. Hence an attempt is made in this study, to assess prevalence of dental caries and oral hygiene status in handicapped children attending various special schools of Jodhpur district.

MATERIALS AND METHODS

An epidemiological study was conducted to assess the prevalence of dental caries, oral hygiene status, deft, enamel opacities and oral hygiene habits among the children 4-15 years of age requiring special health care needs in Jodhpur district. There are various special schools including Government and NGO (non government organization) schools for special care needing children in Jodhpur district. A total number of

children to be included for the study are 1047. Among them, 608 were males and 439 were females of 8 different schools for special children. A schedule for data collection was prepared before starting of the survey, official permission and informed consent was obtained from the parents or guardians, heads of the special schools, Department of Education, Jodhpur. Ethical clearance to conduct the study for research was obtained from Institutional Review Board of Vyas Dental College and Hospital, Jodhpur.

Prior to the dental examination, demographic information was recorded for each subject: age, gender, diet and nature of handicap. Children included in the study were diagnosed as handicapped, subjects attending special schools and all that give permission to conduct the study and subjects whose parents / caregivers / institutional head give consent. Subjects unable to cooperate during oral examination, mainly due to severe intellectual disability were not included.

Oral hygiene status will be assessed using dental caries, oral hygiene status malocclusion, deft, fluorosis and oral hygiene habits by survey performa prepared with, the help of WHO oral health assessment form (1997)⁹. According to nature of handicap, they were divided into following categories: Blind, Deaf and Dumb, Mentally Retarded, Orthopedic Handicapped and Multiple Groups. Before starting the study, the purpose of study was informed and explained to the children and the respective authorities of the institution. However help from the teachers/caretakers were taken to explain the purpose of study and general information regarding name, age and oral hygiene practices were recorded with the help of respective class teachers/caretakers who were used as co-coordinators for the study as they are the means of communi-

Table 4: SHOWING DISTRIBUTION OF dmft COMPONENTS AMONG HANDICAP GROUPS

Handicap Group	Decayed	missing	Filled	dmft	Mean dmft+/- Sd
Blind	78 (18.18%)	18 (4.19%)	41 (9.55%)	137 (31.9%)	0.6 +/- 0.2
Deaf and Dumb	68 (15.8%)	04 (0.93%)	21 (4.89%)	93 (21.67%)	0.4 +/- 0.2
Orthopedic Impaired	61 (14.21%)	07 (1.63%)	28 (6.52%)	9 (22.37%)	0.8 +/- 0.1
Mentally Retarded	33 (7.69%)	02 (0.47%)	08 (1.86%)	43 (10.02%)	0.38 +/- 0.9
Cerebral Palsy	05 (1.16%)	00 (0.00%)	02 (0.46%)	07 (1.63%)	0.32 +/- 1.02
Multiple Disability	29 (6.75%)	11 (2.65%)	13 (3.03%)	53 (12.35%)	0.33 +/- 1.1
Total	274 (63.87%)	42 (9.79%)	113 (26.34%)	429 (100%)	0.9 +/- 1.04

F = 2.69, P > 0.05, Not Significant

Table 5: SHOWING SEX WISE DISTRIBUTION OF ORAL HYGIENE STATUS AMONG HANDICAP GROUPS

Handicap Groups	Good			Fair			Poor		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Blind	31	21	52	55	44	99	33	29	62
Deaf and Dumb	52	47	99	81	51	132	52	47	99
Orthopedic Impaired	57	34	91	49	29	78	61	40	101
Mentally Retarded	11	09	20	26	23	49	31	17	48
Cerebral Palsy	03	01	04	02	02	04	03	02	05
Multiple Disability	29	20	49	21	13	34	11	10	21
Total	183	132	315	234	162	396	191	145	336

X² = 29.2, Significant, P = .001

Males v/s Females X² = 0.36, Not Significant

*A total of 22 cases were excluded as the index teeth were not present in younger subjects.

Table 6: SHOWING ORAL HYGIENE STATUS ACCORDING TO MODE OF CLEANING TEETH AMONG HANDICAP GROUP

Handicap Group	Themselves				Other's help				Under Supervision			
	Good	Fair	Poor	Total	Good	Fair	Poor	Total	Good	Fair	Poor	Total
Blind	32 (7.9%)	22 (5.4%)	34 (8.4%)	88 (21.9%)	9 (11.4%)	5 (11.9%)	1 (2.3%)	15 (35.7%)	14 (27.4%)	7 (13.7%)	1 (1.46%)	22 (43.13%)
Deaf and Dumb	90 (22.4%)	30 (7.4%)	34 (8.4%)	154 (38.4%)	5 (1.2%)	3 (7.1%)	3 (7.1%)	11 (26.1%)	3 (5.8%)	4 (7.8%)	1 (1.9%)	8 (15.6%)
Orthopedic Impaired	62 (15.4%)	13 (3.2%)	35 (8.7%)	110 (27.4%)	1 (0.24%)	4 (9.5%)	2 (4.7%)	7 (16.6%)	3 (5.8%)	3 (5.8%)	0 (0.00%)	6 (11.76%)
Mentally Retarded	7 (1.7%)	6 (1.4%)	3 (0.7%)	16 (3.9%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	32 (0.0%)	1 (1.96%)	1 (1.9%)	2 (3.92%)
Cerebral Palsy	0 (0.0%)	1 (0.2%)	0 (0.0%)	1 (0.24%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (1.96%)	3 (5.8%)	4 (7.8%)	8 (15.6%)
Multipal Disability	11 (2.7%)	13 (3.2%)	8 (1.9%)	32 (7.9%)	2 (4.76%)	3 (7.1%)	4 (9.5%)	9 (21.4%)	3 (5.8%)	2 (3.9%)	0 (0.0%)	5 (9.80%)
Total	202 (50.3%)	85 (21.1%)	114 (28.4%)	401 (100%)	17 (40.4%)	15 (35.7%)	10 (23.8%)	42 (100%)	24 (47.0%)	20 (39.2%)	7 (13.7%)	51 (100%)

X² = 5.96, P > 0.05. Not Significant

cation. General information and oral hygiene practices of deaf and dumb children were obtained through a sign language by teachers. The examination of oral health status was done by using various indices OHI-S (Green and Vermilion), Dental Caries (WHO criteria), Fluorosis and Dentition Status was done according to WHO oral health assessment form (1997)⁹. Natural light was used for the examination of the children. Clinical assessment was done using plane mouth mirrors, periodontal index probes, explorers, tweezers, kidney trays, cotton holder, disposable mouth masks, disposable gloves, sterilized cotton and gauze pieces and sterilization medium - Cidex. Clinical findings of the children were been recorded according to the Performa prepared using WHO (1997) criteria and reported to the class teachers at the end of the day of the examination. Reference slips were forwarded to the parents

or guardians of the students for information and necessary treatment required for children. The data was retrieved from pre-coded survey Performa to a excel format in computers. A master file was created for the purpose of data analysis. Descriptive statistics that included mean, standard deviation and percentages were calculated for each of the categories. Data were analyzed using Chi- square test and ANOVA test.

RESULTS

The study sample comprised of 1047 children with special health care needs with age group of 4-15 years of which 608 were males and 439 were females. The study shows that out of 58.07% of males 24.45% were affected with caries whereas out of 41.92% of females 21.49% of

Table 7: SHOWING ORAL HYGIENE STATUS AND CARIES PREVALENCE AMONG HANDICAP GROUPS

Handicap Groups	Good	Caries Affected	Fair	Caries Affected	Poor	Caries Affected
Blind	65 (32.33%)	40 (19.9%)	54 (31.39%)	28 (16.55%)	42 (34.7%)	24 (19.83%)
Deaf and Dumb	78 (38.8%)	35 (17.41%)	44 (25.28%)	21 (12.20%)	31 (25.6%)	17 (14.05%)
Orthopedic Impaired	15 (7.4%)	7 (3.48%)	21 (12%)	15 (8.49%)	16 (13.2%)	9 (7.44%)
Mentally Retarded	18 (8.9%)	11 (5.47%)	19 (11.04%)	7 (4.06%)	6 (4.9%)	2 (1.65%)
Cerebral Palsy	14 (6.9%)	9 (4.48%)	7 (4.06%)	4 (2.32%)	17 (14.0%)	11 (9.09%)
Multiple Disability	11 (5.4%)	7 (3.48%)	27 (15.69%)	11 (6.39%)	9 (7.4%)	7 (5.79%)
Total	201	106 (54.22%)	172	86 (50%)	121	70 (57.85%)

$\chi^2 = 3.69$, $P > 0.05$, Not Significant.

*22 cases were excluded as the index teeth were not present in younger subjects.

females were affected with dental caries according to sex. Caries prevalence between handicap groups, $\chi^2 = 3.274$, $P < .001$ highly significant. According to mode of cleaning teeth in handicap groups caries prevalence it was observed maximum in the children cleaning their teeth at themselves and least in the group of children cleaning their teeth under supervision. DMFT component was seen maximum in cerebral palsy with mean DMFT \pm Sd 2.1 \pm 1.7 and the value is significant. The dmft component was seen maximum in orthopedic impaired with dmft \pm Sd 0.8 \pm 0.1 and the value is not significant. Oral hygiene status according to sex wise distribution shows significant value. Oral hygiene status according to mode of cleaning teeth among handicap group compared with intra group and the value was not significant. Oral hygiene status and caries prevalence among handicap groups the mean value obtained was not significant.

DISCUSSION

Oral health care for children with disabilities is a health care area that has received scant attention. Handicapped are often termed as disadvantaged group, because they are deprived of many social benefits in the society ranging from mental, social, economical, physical, and educational and various others. Hence the prevalence of dental caries and oral hygiene status in physically handicapped children has drawn the attention of many researchers towards this side.

Studies have been done in various geographical areas of India and abroad to assess the prevalence of dental caries and oral hygiene in handicapped children.¹⁰⁻¹² So the present study was carried out on special care needing children to assess the prevalence of dental caries and oral hygiene status in eight special schools of Jodhpur district.

The study population consists of 1047 special care needing children attending eight special schools, out of which, 45.94% (481) had dental caries with mean DMFT being 1.0 \pm 0.9 and dmft being 0.9 \pm 1.04.

Similar results were seen in studies done by Nagaraja Rao G (1985)¹³, Rawlani *et al* (2001)⁶, Nunn JH and Murray JJ (1987)¹⁴, Ohito FA. *et al* (1993)¹⁵ and Jitender Solanki (2013)¹² where the prevalence rate was 47.0%, 50.4%, 50.0%, 44.0% and 60% respectively.

The higher prevalence of dental caries in handicapped children could be attributed to low power of co-ordination and comprehension leading to negligence of oral hygiene and improper brushing¹⁶. On the other hand, communicating oral health needs, anticonvulsant medications also impact on the oral health of the children¹².

It was observed that the caries prevalence was higher in male handicapped children 24.45% (256) than females 21.49% (225). The difference was statistically significant ($P < 0.05$). Similar results were obtained by Al-Alousi (2009)¹⁷, Jain M *et al.* (2009)¹¹, AL-Dafaai RR. (2010)⁹, Ballal JL. (2010)¹⁸ in their studies.

It was seen that the highest prevalence of dental caries was observed in deaf and dumb group 15.28% (160) with DMFT 150 (27.12%) mean DMFT of 1.2 \pm 1.1, and dmft 93 (21.67%) and mean dmft 0.4 \pm 0.2 and least was seen in cerebral palsy group 0.76% (8) with mean DMFT of 2.1 \pm 1.7, and dmft 0.32 \pm 1.02 respectively. This difference was found to be significant with ($P < 0.05$).

It is in accordance with the study done by Ajami BA *et al* (2007)¹⁹ Simon E.N.M. *et al* (2008)²⁰, AL-Dafaai RR. (2010)⁹, have shown higher prevalence of dental caries in deaf and dumb group compared with various other group. On the other hand, Singh A *et al* (2014)²¹ showed the lower prevalence of dental caries in deaf and dumb as compared to blind children. The high caries activity in these children can be attributed to their difficulty in maintaining oral hygiene, poor muscular co-ordi-

nation and muscle weakness interfering with routine oral hygiene practices²².

Similarly, in blind group caries prevalence is 9.27 % (97) with DMFT 150 (30.36%) & dmft 137 (31.9%), mean DMFT & dmft are 0.8 \pm 1.3, 0.6 \pm 0.2 respectively. Almost similar results were observed in study done by Rao D B (2001)¹⁰ and McAlister T (2003)²³ in mixed dentition group. In blind children caries prevalence may be due to a higher level of fear and anxiety in these children which may reflect a lack of regular dental care and poor past dental experience²⁴. In our study lower caries prevalence was observed in this blind group due to the special preventive treatment programs provided by dental institutions regularly.

In cerebral palsy group, with the least caries prevalence of 0.77% (8) with DMFT 09 (1.82%) & dmft 07 (1.63%), mean DMFT & dmft are 2.1 \pm 1.7 & 0.32 \pm 1.02 respectively. In our study it is resulted to be least may be due to less number of children. According to Adenubi J O (1997)²⁵, children under this group are presented with problems in behavioral management and these mishaps takes place are due to congenital, natal and perinatal causes.

In orthopedic impaired group caries prevalence is 11.55% (121) with DMFT 90 (18.21%) & dmft 96 (22.37%) and mean DMFT & dmft are 1.4 \pm 1.2 & 0.8 \pm 0.1 respectively. Rao D B (2001)¹⁰ also stated and observed the same results in his study on the prevalence of dental caries. In orthopedic children caries prevalence may be raised due to dependency on caregivers for daily work as they play a pivotal role in prevention and children are totally dependent on them²⁶. In our study caries prevalence showed low prevalence in this group as compared to other groups.

In mentally retarded group caries prevalence is 4.77% (50) with DMFT 51 (10.32%) & dmft 43 (10.02%) and mean DMFT & dmft are 1.6 \pm 1.4 & 0.38 \pm 0.9 respectively. Simon E. N. M. (2008)²⁰ also reported similar results in mentally handicapped children. Khadem P (2011)²⁶ and Hashemi Z (2012)²⁷ observed higher caries prevalence in mentally retarded children due to wide range of handicapping and learning disability. In our study caries prevalence reported to be very low due to the special programme been conducted by government in the institutions (Hapse and Tapse) and availability of trained staff who supervised children for 2 times brushing in school.

In multiple disabilities group caries prevalence is 4.30% (45) with DMFT 60 (12.14%) & dmft 43 (10.02%) and mean DMFT & dmft are 1.1 \pm 0.6 & 0.33 \pm 1.1 respectively. In multiple disability, all the children having more than one disability were included in this group.

Regarding the mode of cleaning teeth, those who clean their teeth by themselves, with other's help and under supervision have got prevalence dental caries 413(85.86%), 34(7.07%) and 34(7.07%) respectively. Higher prevalence among those who clean teeth themselves may be due to improper and unability to clean teeth at own where as other group with others help and under supervision may be due to some of the key factors like ability of the supervision, the position of the child, the selection of tooth brush and technique of brushing and the co-operation of patient⁴.

The overall oral hygiene status among study population was recorded as fair in 396, 336 in poor and 315 of the study population showed good oral hygiene status and oral hygiene status among different handicap groups was statistically significant < 0.001 . There was no significant difference between males and females. Studies done by Shaw L. *et al* (1986)²⁸, Gizani S. *et al* (1997)¹¹ and Kamatchy KRJ. *et al* (2003)²³ have shown similar results with a poor oral hygiene status of 7.0%, 10.1% and 13.16% respectively. This may be due to cumulative neglect of oral health which can be due to various reasons and lack of regular dental care²⁹.

According to oral hygiene status, the majority of the study population had fair to good oral hygiene status. This may be attributed to their institutionalization in special schools and under direct supervision of the teachers of the institutions, accompanied with cooperation of non-government organization and local dental institutions taking part in improvement of the oral hygiene and betterment of the special children. Few subjects with poor score may be because of their extent of handicapped nature and uncooperation.

In this study oral hygiene status was found to be poor among deaf and dumb groups, where as studies done by Greeley CB. *et al* (1976)⁹, showed that oral hygiene was worse in blind students. This is because the maintenance of oral hygiene remains the most outstanding challenge in the care of blind patients⁹. According to our study results, deaf and dumb group children were among the poor oral hygiene status because the children residing in the Gandhi Mook Badhir were not taken care by any dental institution or any other organization for treatment purpose as compared to the other institutions receiving treatment on the regular basis.

The poor oral hygiene status described above could partly be explained by limitations in personal abilities or technical difficulties (e.g. The inability to reach the tooth brush), but there is quite a strong feeling that nurses and caregivers are more interested in general hygiene than in oral hygiene. Parents and educators of handicapped children are aware of the presence of oral problems such as bleeding gums, halitosis, and the presence of plaque or calculus. Many have reported that they had never received any advice on oral health care³⁰.

Regarding the mode of cleaning in different handicap groups, there has not been much difference between cleaning their teeth by themselves, or with other's help or under supervision, as majority of them had fair to good oral hygiene status. This may be due to the psychological competition, to show that they are as good as others, and this may also be due to strict instruction and supervision of teachers to the students to clean their teeth regularly after taking food.

Oral hygiene has played a major role as a causative factor in the prevalence of dental caries. Even though oral hygiene status of majority of the study population was between fair and good, 45.94% were affected with caries in the present study. Statistically significant difference was seen between oral hygiene status and dental caries

The present study showed some unexpected observation in contrast to general belief that "A clean tooth never decays". Dental caries prevalence of 54.22% was observed in children having good oral hygiene, 50% caries prevalence observed in children having fair oral hygiene, 57.85% prevalence among children having poor oral hygiene. The differences between oral hygiene status and caries prevalence was not significant, $\chi^2 = 3.69$, $P > 0.05$. Some other factors like fluoride, environment, genetics etc., might have influencing the caries prevalence rather than oral hygiene and diet in study population.

CONCLUSION

The dental profession should be aware of its responsibilities and be prepared to play its part in improving the dental health of handicapped children. Doctors, health visitors, teachers, caretakers and parents play a vital role in maintenance of good oral health of handicapped children. School dental health programs should be undertaken in these institutions accordingly:

- 1) School dental health education in which teaching the students regarding dental health and training of teachers and parents regarding maintenance of oral hygiene through proper brushing techniques, use of fluoride tooth paste and mouth washes.
- 2) School dental health services - like providing both periodic check up for early diagnosis and prompt treatment.
- 3) School health environment - including availability of fluoride in drinking water or supplements if fluoride concentration is low or measures to control concentration in water.
- 4) Restricting the sale of chocolates, candies and cariogenic snacks in school premises.

REFERENCES

1. Shivakumar M. Dental care delivery to the institutionalized handicapped children.

- IAPHD 2002: 6-7.
2. Peter S. Essentials of preventive and community Dentistry, 2nd edition. New Delhi. 2004: 459-63.
 3. Kamatchi JKR, Joseph J, Krishnan ACG. Oral hygiene and periodontal status in a group of institutionalized hearing impaired individuals in Pondicherry-A Descriptive study. IAPHD 2002: 12-4.
 4. Varma RK. Preventive measures in handicapped children. J Ind Dent Assoc 1981; 53: 173-4.
 5. Saravanakumar MS, Vasanthakumari A, Bharathan R. Oral health status of special health care needs children attending a day care centre in Chennai. International Journal of Students' Research. 2013; 3(1): 12-5.
 6. Rawlani SM, Gupta G, Thadani M. Prevalence of dental caries in physically challenged children. J Ind Dent Assoc 2001; 72: 154-5.
 7. Schembri A, Fiske J. The implications of visual impairment in an elderly population in recognizing oral disease and maintaining oral health. Spec Care Dent. 2001; 21: 222-26.
 8. Gizani S, Martens DL, Marks L. Oral health condition of 12- year- old handicapped children in Flanders. (Belgium) Community Dentistry and Oral Epidemiology 1997; 25: 352-7.
 9. World Health Organization. Oral Health Surveys —Basic Methods, 4th Ed, Geneva, WHO 1997.
 10. Rao DB, Hegde AM, Munshi AK. Caries prevalence amongst handicapped children of South Canara District, Karnataka. J Indian Soc Pedo Prev Dent 2001; 19(2): 167-73.
 11. Jain M, Mathur A, Sawala L, Choudhary G, Kabra K, Duraiswamy P, *et al*. Oral health status of mentally disabled subjects in India. Journal of Oral Science 2009; 51(3): 333-40.
 12. 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; 4(2): 1-5.
 13. Rao NG. Oral health status of certified school children of Mysore State -A Report. J Ind Dent Assoc 1985; 57(2): 61-4.
 14. Nunn JH, Murray JJ. The dental health of handicapped children in Newcastle and Northumberland. Br Dent J 1987; 162-9.
 15. Ohito FA, Opinya GN, Ombe J W. Dental caries gingivitis and dental Plaque in handicapped children in Nairobi, Kenya. East-Afr.med.-J 1993; 70(2): 71-4.
 16. Bhavsar JP, Damle SG. Dental caries and oral hygiene amongst 12-14 years old handicapped children of Bombay, India. J Indian Soc Pedo Prev dent 1995; 13: 1-3.
 17. Al — Alousi JMR. Oral health status and treatment needs among blind children in Iraq. MDJ 2009; 6(4): 313-24.
 18. Ballal JL, Ahmed A. Prevalence of dental caries among children with speech and hearing impairment in Ramapuram, Chennai.SRM University Journal of Dental Sciences 2010; 1(2): 143-5.
 19. Ajami BA *et al*. Dental treatment needs of children with disabilities. JODDD 2007; 1(2): 93-8.
 20. Simon ENM, Matee M I, Scheutz F. Oral health status of handicapped primary school pupils in Dar es salaam, Tanzania. East African Medical Journal 2008; 85(3): 113-7.
 21. Singh A *et al*. Comparative study of oral hygiene status in blind and deaf children of Rajasthan. JAMDSR 2014; 1(1): 26-31.
 22. Altun C, Guven G, Akgun OM, Akkurt MD, Basak F, Akbulut E. Oral Health Status of Disabled Individuals Attending Special Schools. Eur J Dent. 2007; 4(4): 361-6.
 23. McAlister T *et al*. The oral and dental health of children in special national schools in the eastern regional health authority area, Ireland. Journal of Disability and Oral Health. 2003; 4(2): 69-76.
 24. Stiefel DJ. Dental care consideration for disabled adults. Spec Care Dentist. 2002; 22(3): 26s-9s.
 25. Adenubi JO, Saleem FH, Martinez JO. Dental health care at the disabled childrens rehabilitation centre in Riyadh. Saudi Dent J 1997; 9: 9-13.
 26. Khadem P *et al*. Evaluation of oral health status in mild to moderate mentally disabled children in comparison with normal children in Isfahan (Iran). JMDS 2012; 35(4): 253-62.
 27. Hashemi Z. Oral health status of a sample of disabled group. JOHOE.2012; 1(1): 23-8.
 28. Udin D, Kuster G. The influence of motivation on a plaque control programme for handicapped children. J Am Dent Assoc 1984; 109: 591-3.
 29. Gupta DP, Chowdury KSR, Sarkar S. Prevalence of dental caries in handicapped children of Calcutta. J Indian Soc Pedo Prev Dent 1993; 11: 23-7.
 30. Choi NK, Yang KH. A study on the dental disease of the handicapped. J Dent Child 2003; 70(2): 153-8.