



Dental Neglect Affecting Oral Health Status in India

Aditi Mathur¹, Anmol Mathur² and Vikram Pal Aggarwal^{2*}

¹Department of Pediatric and Preventive dentistry, Surendera Dental College and Research Institute, Sri Ganganagar, Rajasthan, India

²Department of Public Health Dentistry, Surendera Dental College and Research Institute, Sri Ganganagar, Rajasthan, India

*Corresponding author: Vikram Pal Aggarwal, BDS, pursuing MDS, Department of Public Health Dentistry, Surendera Dental College and Research Institute, Sri Ganganagar, Rajasthan, India, Tel: 7734879313, E-mail: drvikramaggarwal@yahoo.com

Abstract

Background: Dental caries has been called as scourge of modern civilization and is without doubt, one of the mankind's most prevalent chronic diseases. The concept of dental neglect may offer a viable linkage between dental health and the cultural, social and attitudinal factors.

Aim: To evaluate the role of dental behaviour as intervening factors between maternal education and socio-economic status on one hand and caries experience on the other hand.

Material and methods: This study presents demographic and attitudinal data from parents of each 800 children from age groups 10-11 and 14-15 years who were selected by a stratified random sampling technique. The association of dental neglect and caries status was tested by first dichotomizing the continuous dental neglect variable and secondly using analysis of variance to examine DMFS of individual age group respectively and their components.

Results: Study showed that dental neglect was greater among females, older children, those whose mother had less education, children who had not received dental care in previous two years, and those for whom the responding parent's last dental visit was due to problem rather than for a routine examination. Among the older children, those in higher dental neglect group had significantly higher dental caries experience (DMFS with $P < 0.001$), and greater number of decayed permanent tooth surface ($P < 0.019$).

Conclusions: Dental neglect scale may have utility in predicting and understanding variation in dental health, and to provide education to promote dental health.

Keywords

Child, Dental neglect, Dental caries

Introduction

The dental treatment is still a night mare for most of the people. Dental neglect have tight bond with dental caries. Dental caries has been called as scourge of modern civilization and is without doubt, one of the mankind's most prevalent chronic diseases. The concept of dental neglect may offer a viable linkage between dental health and the cultural, social and attitudinal factors. Australia's 1993 children's protection act defines neglect as "any serious omission or commission

by a person which jeopardises or impairs the child's psychological, intellectual or physical development" [1]. A study of dental neglect among elderly Americans used data from nine questionnaire items which were used to generate subjects self -ratings of dental neglect along the three dimensions of "self-care", "professional utilization" and, "general neglect" [2]. In the past, measurements in health epidemiology have been predominantly clinical [3]. But the effectiveness of measuring subjective health by using self-reported scales has been shown in a number of studies in recent times [4-15], which were achieved in a cheaper and less invasive manner than their clinical equivalents [16]. This could result in improved understanding of oral health problems [17]. Validity and reliability are important aspects to consider when comparing the effectiveness of self-reported scales [18]. There are many definitions available for dental neglect in various texts. Thomson WM, Spencer AJ et al. defined dental neglect as being failure to take precautions to maintain oral health, failure to obtain needed dental care and physical neglect of the oral cavity [19]. Dental neglect, as defined by the American academy of paediatric dentistry, is the "will full failure of parent or guardian to seek and follow through with treatment necessary to ensure a level of oral health essential for adequate functions and freedom from pain and infections" [20]. Dental neglect which can be considered as a type of behaviour, being developed by the parents can cause devastating effects on the oral health of their wards.

High dental neglect scores in males were associated with more decayed and missing teeth, high levels of plaque, irregular use of dental services, low self- ratings of oral health [21]. Dental caries, periodontal diseases, and other oral conditions, if left un- treated, can lead to pain, infection and loss of functions. These undesirable out comes can adversely effect learning, communications, nutrition and other activities necessary for normal growth and development [22]. Failure to seek or obtain proper dental care may result from factors such as family isolation, lack of finance, parental ignorance, or lack of perceived value of oral health [23]. The above stated studies draw interest towards this veiled factor behind the mankind's most prevalent chronic diseases (dental caries). The aim of this study was to calculate dental neglect scores of the parents and its effect on dental health among school children of 10-11 and 14-15 years age groups.

Material and Methods

A cross sectional study was conducted in school children between

Table 1: Response distribution percentage to dental neglect items.

Items	Definitely no			Definitely yes	
	1 N (N %)	2 N (N %)	3 N (N %)	4 N (N %)	5 N (N %)
Maintain his/her dental care	83 (10.4)	158 (19.8)	62 (7.8)	406 (50.8)	91 (11.4)
Receive needed dental care	65 (8.1)	177 (22.1)	87 (10.9)	415 (51.9)	56 (7.0)
Needs dental care: parent defers	201 (26.3)	326 (40.8)	159 (19.9)	74 (9.3)	31 (3.9)
Needs dental care child defers	139 (17.4)	326 (40.8)	178 (22.3)	136 (17.0)	21 (2.6)
brushes as well as he/she should	22 (2.8)	165 (20.6)	107 (13.4)	473 (59.2)	33 (4.1)
Controls between meal snacking	21 (2.6)	103 (12.9)	26 (3.3)	560 (70.0)	90 (11.3)
Considers dental health important	29 (3.6)	129 (16.1)	92 (11.5)	485 (60.6)	65 (8.1)

age group of 10-11 years and 14-15 years in Udaipur city. Calculation of sample size was based on the pilot study done two month prior of the study. The required calculated sample size was 375 and 387 for the two age groups respectively. For this Udaipur City was divided into five zones- Centre, North, South, East, West and five schools from each zone were randomly selected. A total of 984 individuals belonging to 10-11 and 14-15 age groups were sent with the invitation letter. Out of which 856 reported for the study. Those individuals who were non cooperative, absent on the day of study, and with incomplete questionnaire, were excluded from the study. After applying the inclusion and exclusion criteria final sample consists of 800 children with 400 in each age group. This total is more than the calculated number of sample by the pilot study. The association of dental neglect and caries status was tested by first dichotomizing the continuous dental neglect variables and secondly using analysis of variance to examine DMFS of individual age group respectively and their components. Selected children of these age groups were sent with a letter which asked their parents to visit school on the respective day for participation in the study. Proforma was prepared to collect the data about the dental neglect [24]. Proforma contain a comprehensive questionnaire in which dental neglect was investigated by capturing parental responses to seven statements, using a Likert scale ranged from one (“definitely no”) to five (“definitely yes”) the statements were [19].

1. Your child maintains his/her home dental care.
2. Your child receives the dental care he/she should.
3. Your child need dental care, but you put it off.
4. Your child needs dental care but he/she put it off.
5. Your child brushes as well as he/she should.
6. Your child control meals snacking as well as he/she should.
7. Your child considers his/her dental health to be important.

Parents of these children were asked to fill the proforma which was distributed to each of them. DMFS index were recorded for both the ages respectively using the method and standards recommended by WHO oral health survey 1997. The monthly family income in the present study has been dichotomized into more and less than Rs 1,20,000 per year i.e. 8010 - 12019 per month. This has been documented by 2012 modification of well accepted Kuppuswamy scale [25] for social stratification. A mobile dental unit was used to facilitate standardization of environment, illumination and equipment. Proper sterilization methods were used for diagnostic instruments. Data collection was conducted in the month of September and December in the year 2014.

Quality of data

Inter and intra examiner variability between three trained examiners (Dentist) for the diagnosis of decayed, missing and filled teeth in both dentition were calculated to be minimal (kappa coefficient > 0.7) when tested two days prior to study.

Ethical clearance was obtained from the Darshan dental college ethical committee and informed consents were obtained from the parents of the subject’s.

Data collected was entered into the spreadsheets. The statistical

Table 2: Mean dental neglect scores by key background variables.

Variables	Mean	S.D	p value
Males	21.89	3.62	0.69*
Females	22.10	3.87	
School grade			
10-11 age	21.83	3.82	0.55*
14-15 age	22.15	3.66	
Family type			
Two parent	21.97	3.91	0.94*
Others	22.01	3.52	
House hold income			
< 1,20,000	22.03	3.74	0.87*
> 1,20,000	21.95	3.75	
Source of income			
Benefit/pension	21.88	3.95	0.67*
Salary/wages	22.11	3.57	
Parental visiting pattern			
Routine	21.77	3.77	0.42*
Symptom driven	22.20	3.72	
Maternal education level			
Primary only	23.18 ^a	2.51	< 0.05**
Secondary	21.29 ^b	4.20	
Tertiary	21.52 ^b	4.02	
Dental service use in previous two year			
Free treatment camp	22.40 ^a	3.77	< 0.05**
Private dentist	21.12 ^b	3.54	
Both types	22.22 ^a	3.72	
Neither type	21.91 ^b	3.84	

Lower dental neglect- Dental Neglect Scale score of < 22, Higher dental neglect- Dental Neglect Scale score of ≥ 22;

*: t test; **: Kruskal Willis test;

Kruskal-Wallis test, values in the column with different letters indicate significant differences at P < 0.05.

package for social sciences (SPSS) software version 20.0 was used for data processing and data analysis. The statistical significant difference among groups was determined by t test and Kruskal Willis test. The level of significance was set at p < 0.05.

Results

Table 1 illustrates the response distribution for the seven statements. The response to seven statements were from “definitely no” to “definitely yes”. Responses to statements 1, 2, 5, 6 and 7 were having “definitely yes” and for statements 3 and 4 result is “definitely no”.

Table 2 illustrates association between background characteristics and mean dental neglect scores. Higher scores were apparent for children who were females, from joint families, from house hold with incomes of 1,20,000 Rupees per year, the income was derived from salary/wages, had parents who did not make routine dental visits; or who had not made a dental visit in the previous two years. Exclusive users of private dental services had lower dental neglect scores.

Table 3 shows the relationship between dental neglect and dental

Table 3: Caries experience (mean scores) by dental neglect category age group and dentition.

Younger children age 10-11 years	Lower dental neglect	Higher dental neglect	P
1. Decayed surfaces	0.82	1.18	< 0.01
2. Missing surfaces	0.00	0.28	0.15
3. Filled surfaces	0.00	0.37	0.18
4. DMFS	0.82	1.24	< 0.001
Older children age 14-15 years			
1. Decayed surfaces	1.48	1.74	0.02
2. Missing	0.00	0.52	0.05
3. Filled	0.00	0.80	0.01
4. DMFS	1.48	1.83	< 0.01

caries. Age 10-11 years old children who were in higher neglect group tend to have more decayed (1.18) than those who have in lower dental neglect group (0.82).

Higher neglect group had more missing teeth than lower dental neglect group. Older children (14-15 years) who were in higher neglect group had greater overall caries experience (DMFS), than their peers in the lower neglect group (t test, $p < 0.0001$). They also had a higher number of decayed permanent tooth surfaces (t test, $p < 0.0001$) than 10-11 years old children.

Discussion

Neglected child is one who had evidence of physical and mental health primarily due to failure on the part of parent or caretaker to provide adequately for child needs. In our study the usefulness of child dental neglect has produced some encouraging observation with relation to DMFS score.

The distribution of replies to the seven items (Table 1) suggests a marked difference between response to items referring to professional care (statement 2, 3 and 4) and those who explore home care (1, 5 and 6). The importance of dental health (statement 7) appears to represent a different dimension to home care, and has a rather different distribution to these of the professional care statements, which are in association with Thomson et al. [19]. Dental neglect in this study is positively associated with the child not receiving dental care in the previous two years and in children whose parents had visited to dentist due to problem. But Chen M [26], Crawford AN et al. [27], Whittle JG et al. [28], and Barnard PD et al. [29] shows that children whose parent's dental visiting pattern is more habitual would have lower dental neglect. In previous studies [29,30], high neglect scores were reported in males but in our study high score is recorded in females as they must be more reluctant towards dental treatment, they are more anxious and have a fear towards it.

The study conducted by Thomson WM et al. [19], suggested that higher dental neglect scores were apparent for children who were not from two parent families, which is in accordance to our study. This must be due to the numbers of siblings are more and parents and others elder are not able to give proper attention towards child dental health in joint families.

According to Silver DH et al. [31], socio-economic status plays an important role in dental care, it also shows that high dental neglect is associated with low income group and the reason concluded was high cost of dental treatment which is unaffordable by low socio economic strata, where as in our study socio-economic status does not significantly influence the attitude of people towards dental treatment. The authors conclude that lack of awareness towards dental treatment is a major contributor in developing countries then that of people from developed countries.

Education of mother plays a very important role in a child dental health and low maternal education has a widely documental role as a risk indicator for caries in the present study which is supported by various studies [26,32]. Mother's determination towards dental treatment has to have a profound influence on child's attitude towards dentistry. Highly anxious mothers may have their children

displaying negative and uncooperative behaviours. By the analysis of dental health status and dental neglect in the present study it has been noticed that higher D (decayed) component of DMFS was among the 14-15 Year age group, correspond to higher dental neglect scores. This brings a conclusion that those children whose parent reported with higher dental neglect have more untreated caries. This must be due to lack of interest towards dental care among this group.

The Dental Neglect Scale appears to be a sound method for objectifying dental neglect. It has many of the features of a satisfactory health index; it is easily measured, apparently unaffected by the observation process, and able to be manipulated statistically.

Conclusions

Dental neglect is a much neglected factor having valid contribution on oral health status not only on an individual but on the generation to come. This paper clearly indicates poor dental health among children with parents exhibiting higher dental neglect score. It has already been proved that education level and socioeconomic status is a major contributor towards oral health of an individual, but person with lower dental neglect score in spite of being well educated or affluent are not demonstrating a regular dental visiting pattern. Therefore education programs with specific attention are required for parents to increase knowledge, understanding and practices that foster improved oral health.

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