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Original Article

Dentistry Section

Impact of Dental Neglect Scale on Oral Health Status Among Different Professionals in Indore City-A Cross-Sectional Study

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ABSTRACT

Background: Young educated Indian generation are very much health conscious. They take adequate nutritious balanced diet and practice physical exercise regularly to keep themselves active and healthy. Oral health is a part of general health care system. If oral health is neglected it may affect our general health and as a result it affects our quality of life too.

Aim: To assess dental negligence and oral health status by using Dental Neglect scale questionnaire among different professionals of Indore city.

Materials and Methods: The study consisted of a convenient sample of 400 students of aged 18-25 years from 4 different professional colleges of Sri Aurobindo Group of Institutes of the same campus. A pretested validated questionnaire was used for assessing dental neglect and home dental care practices. Oral health examination was conducted to assess dental caries and oral hygiene status by using DMFT and OHIS respectively. Data was analysed using SPSS Software (version 20).

Results: For OHI(S), majority of the respondents (57.7%) showed fair oral hygiene for DNS score <15, whereas majority of the professionals (63.7%), showed poor oral hygiene for DNS score >15. The Dental Neglect Scale (DNS) score was found statistically significant with OHIS and caries experience at 95% Confidence Interval. There was no statistically significant difference between DNS score and frequency of Decayed, Missing and Filled teeth DMFT.

Conclusion: The Dental Neglect Scale appears to be a sound method for objectifying dental neglect. It has many of the features of a satisfying health index.

However, further validation with other age groups, cultures, place and a larger population is required in order to justify the utility of Dental Neglect Scale in different situations.

Keywords: Dental Care, DMFT Index, Oral hygiene index

INTRODUCTION

The term "Dental Neglect can be defined as the behaviour and attitudes which are likely to have detrimental consequences for the individual's oral health" [1]. In other words Dental Neglect is the failure to fulfill the known knowledge of oral health care for proper maintenance of oral cavity [2].

Prevention is the better option than cure. People need to be very much attentive and meticulous to maintain oral health for the prevention of oral disease. Prevention of oral disease is no doubt very much effective, efficient, adequate and acceptable universal habit implicated to pave the way to a better oral health. Dental professionals and audio visual media provide the necessary dental care measures [3]. But, the truth is that a very few people take adequate regular home dental care and do not take periodic/yearly dental check up by dental professionals to keep their oral cavity healthy.

Oral health education should be incorporated in the educational curriculum from the beginning, so that young generation may be taught about the dental ailments which they may likely to encounter, if they fail to take adequate precaution from early childhood [4].

Oral hygiene is totally related with the behavioural aspect of the person concerned. In order to take care of his/her teeth a person needs to have a positive attitude towards dental health [4]. It has been observed that dental neglect is associated with illiteracy amongst low socio economic class and the prevalence of oral diseases are highest amongst them [5]. But on the contrary the professionals who will hold a respectable position in our country in distant future, whether they are practising healthy oral health care practices or not has to be assessed. The aim of the study was to assess dental negligence and oral health status by using Dental Neglect Scale questionnaire among different professionals of Indore city.

MATERIALS AND METHODS

The present cross-sectional study was conducted during the period from January-March 2014 amongst different professional college students of Sri Aurobindo group of Institutes of Indore city. The colleges taken into consideration were Medical, Engineering, Nursing & Pharmacy. These colleges were selected as all the colleges are in the same campus and the students are residing in the adjacent hostels and sharing the food from common canteen.

Sample

The list of students residing in the same campus and sharing the food in common canteen was taken from HR Department of SAIMS office. It was found that a total of 150 medical, 135 nursing, 120 pharmacy & 110 engineering students were residing in the campus. These students were approached in their respective hostels and a total of 400 professionals who fulfilled the inclusion criteria & willing to participate were selected using simple random sampling.

The study was conducted in two parts: First part consisted of collection of Dental Neglect Scale score by using a pretested as well as validated Dental Neglect Scale questionnaire [6]. Second part consisted of examination of oral hygiene status & dental caries experience by using OHIS [7] & DMFT [8] Index. Informed consent was obtained from the Institutional Review Board of Sri Aurobindo Institute of Medical Sciences, Indore.

Students of age group (18-25 years) who were willing to give written informed consent voluntarily were included in this study. Dental students were excluded from the study to avoid the bias.

The questionnaire comprised of two part.

(1) Dental Neglect Scale,

(2) Self-reported oral health status.

Each participant rated six statements using a Likert Scale [2] which ranged from One ("Definitely No") - Five ("Definitely Yes"). The total scores for the DNS ranged from 6 to 30, with higher scores signifying greater dental neglect. The statements were: "I, keep up my home dental care", "I receive the dental care I should", "I need dental care, but I put it off", "I brush as well as I should", "I control snacking between meals as well as I should", and "I consider my dental health to be important".

STATISTICAL ANALYSIS

All the data was analysed on SPSS version 20. Chi square test was used to see the difference in frequency of categorical data in two groups and levels of statistical significance were set at $p<0.05$. One-way ANOVA test was performed to see the mean difference of different scores or indexes in different groups of student. Spearman Correlation Test was performed to see the inter correlation of different scores.

RESULTS

A total of 400 students from different colleges were recruited for the study. [Table/Fig-1] shows the spectrum of students recruited for the study. [Table/Fig-2] shows the item responses of Dental neglect scale by participants. [Table/Fig-3] Subjects were divided into two group according to Dental Neglect Scale Scores (≤15 and >15). There was no statistical significant difference between DNS score and frequency of Decayed, Missing and Filled teeth.

[Table/Fig-4] showed a significant association ($p<0.0001$) of Dental Neglect Scale and Oral Hygiene Index (S) 63.7% of patients with DNS Score >15 had poor OHIS score. Lowest DMFT score was observed in medical students whereas it was worst in engineering students [Table/Fig-5]. Oral Hygiene Index Simplified (OHIS) showed significant difference in between the groups. DNS score was found highest in pharmacy students and it was least in medical students. There was significant difference in mean DNS scores among different groups of students [Table/Fig-5].

A median split of the DNS score was considered to divide the population into two groups, that is high (DNS Score ≥15) and low (DNS <15) DN groups. Spearman Correlation Test was performed to see the inter correlation of different scores & positive association was found (spearman's rho 0.147, p-value= <0.0001).

College	Sex		Total
	Male	female	
Medical college	49(28.16%)	51(22.5%)	100(25%)
Engineering college	28(16.09%)	72(31.8%)	100(25%)
Nursing college	58(33.3%)	42(18.5%)	100(25%)
Pharmacy college	39(22.14%)	61(26.99%)	100(25%)
TOTAL	174(43.5%)	226(56.5%)	100%

[Table/Fig-1]: Distribution of students

DNS Scale	1	2	3	4	5	MEAN
1 : I keep up my home dental care	41(10.3)	176(44.0)	101(25.3)	61(15.3)	21(5.3)	2.61±1.03
2: I receive the dental care I should	26(6.5)	159(39.8)	126(31.5)	70(17.5)	19(4.8)	2.74±0.98
3: I need dental care, but I put it off	19(4.8)	89(22.3)	155(38.8)	108(27.0)	29(7.2)	3.10±0.98
4: I brush as well as I should	33(8.3)	107(26.8)	131(32.8)	73(18.3)	56(14.0)	3.03±1.15
5:I control snacking between meals as well as I should	24(6.0)	65(16.3)	146(36.5)	86(21.5)	79(19.8)	3.33±1.14
6: I consider my dental health to be important	23(5.8)	87(21.8)	125(31.3)	45(11.3)	120(30.3)	3.38±1.27

[Table/Fig-2]: Frequency distributions of dental neglect scale item responses

DMFT	DNS			p-VALUE(OR Ratio, 95 CI)
	≤15	>15	Total	
≤3	78(23.4)	256(76.6)	334(83.5)	0.349(0.754, 0.418-1.360)
>3	19(28.8)	47(71.2)	66(16.5)	
Total	97(24.2)	303(75.8)		

[Table/Fig-3]: Association of dental neglect score with decayed missing filled tooth

OHIS	DNS			p-VALUE
	≤15	>15	Total	
Good	12(12.4)	10(3.3)	22(5.5)	<0.0001
Fair	56(57.7)	100(33.0)	156(39.0)	
Poor	29(29.9)	193(63.7)	222(55.5)	
Total	97	303	400	

[Table/Fig-4]: Association of dental neglect score with oral hygiene index simplified

College	DMFT	OHIS	DNS
Medical college	2.40±0.652	2.14±0.652	14.32±3.93
Engineering college	2.21±0.99	2.64±0.52	19.17±4.03
Nursing college	2.41±0.88	2.61±0.53	19.00±3.11
Pharmacy college	2.36±1.04	2.61±0.54	19.77±3.94
p-VALUE	0.4020	<0.0001	<0.0001

[Table/Fig-5]: Dental health care among students of different professional courses

DISCUSSION

DNS can be considered to be a "behavioural audit", the first four items seek information on respondent's self-care & professional dental care behaviours, while the fifth item seeks a global rating of the importance placed upon dentition [1].

Strauss et al., was first to investigate dental neglect among American elderly using a nine-item self-report scale. They showed that it is possible to objectively measure the hypothetical construct "Dental Neglect" and examine its association with dental health [9]. After this various authors have tested DNS among various populations across the globe.

Skaret et al., evaluated the reliability and construct validity of the DNS and they concluded stating that the scale may be a relevant instrument for population surveys which aims at identifying risk groups based on information about oral health, oral health related behaviour and attitudes [6].

This scale also has been tested in our country in two different populations by Acharya et al., on 316 parturient women and by Lingaraj et al., on 600 (15-18 years') adolescents [10,11]. Dental students were not included as lot of studies had already assessed their oral health status as well as their knowledge, attitude and behaviour towards oral health.

The present study tested a modification of previously reported six items dental neglect scale given by Thomson et al., and examined

its association with oral hygiene status, caries experience amongst different professionals of Indore city [2]. DNS score was significantly related to the pharmacy college professionals who had greater levels of mean dental neglect scores of 19.77±3.94 followed by engineering students. This finding was in agreement with the finding as reported by Agarwal et al., [12]. Medical college professionals had a lower mean DNS score of 14.32±3.93. The medical students had a good oral hygiene status and minimum caries experience. They too had a good attitude score compared to other professional college students, which is in concordance with the study by Sujatha et al., [13]. In her study she concluded by stating final year undergraduate students had better oral health awareness compared to other year students. Dasar et al., also reported in his study that the knowledge, attitude and behaviour of the medical students were best among the various professionals [14].

The third group of our study was the nursing students who play a pivotal role in the society by serving the suffered humanity. They are professionally very close to both medical and dental professionals and expected to acquire the skills of preventive aspect of the disease. Before percolating that knowledge to the society, they should apply it meticulously on them but in this study it was found that their oral hygiene score was less compared to the engineering and pharmacy students which are contrary to the results of Singh et al., [15]. The said report opined that the knowledge, attitude and practice of nursing students about oral health were adequate.

The pharmacy and engenieering students showed a higher DNS, poor oral hygiene and caries experience. This might be due to lack of proper oral health care knowledge. The working pattern of the engenieering and the pharmacy students are quite different from the health care professionals. The easy availability of dairy products and/or various sugary products in their vicinity may be another reason for the dental caries experience. The students of the aforesaid colleges lack proper preventive knowledge and attitude towards oral hygiene practices. Higher dental neglect as well as avoidance was observed in case of pharmacy students. This finding is very discouraging from the public health point of view. However, there was no significant DNS score differences related to gender in the present study which was in agreement with the study done in United States and Hong Kong populations respectively [16,17], whereas this finding was in contrast to the study done in Dunedin population also [1].

In our study some professional college students inspite of having knowledge about adequate dental care provided by dental service providers, mass media and social media failed to take precautions in them which is in agreement with Murthomaa H et al., where he reported about both young as well as middle aged population are victim of the same attitude [18]. The majority of the participants are residing in the campus hostel so it might have to some extent provide a sense of freedom and autonomy and thus change their attitudes towards negative aspect of dental health and oral hygiene habits. The findings of Lissau et al., corrborates our finding [19]. He stipulated that residing with family surely influences one's lifestyle. The youngsters are influenced by the family tradition and follow them and thus build a positive attitude towards behaviour and lifestyle shaping. Unhealthy lifestyle is likely to be followed by adolescents if they reside with person who do not follow a healthy lifestyle [19]. Other important factors which were observed while interviewing them were laziness, lack of motivation and failing to introduce "innovation" into life, which corroborated the finding of Syrjala et al., [3]. Apart from the above findings another interesting observation found was that, these professional college students are reluctant to spend money for dental check up and they think that it is unnecessary expenditure. Similar finding was reported by Devlin NJ et al., [20].

LIMITATIONS

There are two major limitations in our study. First, we used a convenient sampling technique in one geographical area and thus the results may not be generalizable to all adolescents in the particular area. Secondly, for practical purposes the dental screenings in this study were carried under natural light, only Community Periodontal Probe and mouth mirror were used. It is possible that some caries codings were erroneous, because we were not able to use x-ray, so it might have underestimated the caries experience to some extent. Which was also noticed by Fejerskov et al., as such "Caries experience of a population will be considerably underestimated if the early signs are ignored and are needed to be assessed thoughtfully" [21]. The future studies are needed to be carried out by the use of radiographs for the carious lesions in order to establish a stronger positive association between DNS and dental caries experience.

CONCLUSION

Variations in dental neglect exist in relation to different professions. In addition, oral hygiene status and caries experience was significantly associated with DNS score. Oral health education programs for various professionals are required to increase knowledge, understanding and practices that foster improved oral health. Universities and colleges may include oral health motivation programme as a component of their academic curriculum so that the future generation of professionals are motivated to maintain perfect oral health practices.

REFERENCES

[1] Thomson WM, Locker D. Dental neglect and dental health among 26-year-olds in the Dunedin Multidisciplinary Health and Development Study. *Community Dent Oral Epidemiol*. 2000;28:414–18.

[2] Thomson WM, Spencer AJ, Ganghwin A. Testing a child dental neglect scale in South Australia. *Community Dent Oral Epidemiol*. 1996;24:351-56.

[3] Syrjala AMH, Knuuttila MLE, Syrjala LK. Reasons preventing regular dental care. *Community Dent Oral Epidemiol*. 1992;20:10-4.

[4] Durward CS, Wright FAC. Dental knowledge, attitude and behaviours of Indo-Chinese and Australian born adolescence: *Community Dent Oral Epidemiol*. 1989;17:14-18.

[5] Airen B, Dasar P, Nagarajappa S, Kumar S, Jain D, Warhekar S. Dentition status and treatment need in urban slum dwellers in Indore city, Central India. *J Indian Assoc Public Health Dent*. 2014;12:163-66.

[6] Skaret E, Astrom AN, Haugejorden O, Klock KS, Trovik TA. Assessment of the reliability and validity of the dental neglect scale in Norwegian adults. *Community Dent Health*. 2007;24;247-52.

[7] Greene JC, Vermillion JR. The simplified oral hygiene index. *J Am Dent Assoc*. 1964;68:7-13.

[8] World Health Organization. Oral Health Survey-Basic methods 4th edition. Geneva, Switzerland: WHO: 1997.

[9] Strauss R, Beck JD, Broder H. Defining dental neglect: a population study of older adults. *J Dent Research*. 1994;73:280.

[10] Acharya S, Pentapati KC, Bhat PV. Dental neglect and adverse birth outcomes: a validation and observational study. *Int Dent J Hygiene*. 2013;11:91-98.

[11] Ajagannanavar SL, Sequeira PS, Jain J, Battur H. Dental neglect among college going adolescents in Virajpet, India. *J Indian Assoc Publ Health Dent*. 2014;12:215-18.

[12] Agarwal M, Agarwal S, Anuradha P, Dutta SD, Sharma A, Gupta M, et al. Dentition status and treatment needs of engineering students in Lucknow City. *J Indian Assoc Publ Health Dentist*. 2014;12(4):272-75.

[13] Sujatha BK, Javagal PC, Gomez MSS. Assessment of oral health awareness among undergraduate medical students in Davengare city: A cross-sectional survey. *J Indian Assoc Publ Health Dent*. 2014;12:43-46.

[14] Dasar PL. Oral Health Related Knowledge, Attitude and Behaviours of Different Professional College Students in Hubli-Dharwad, Karnataka. *J Indian Assoc Publ Health Dent*. 2011;17:472-75.

[15] Kaira LS, Chhonkar DPS, Kusha CG, Bhayana B, Dabrol E. Oral health related knowledge, attitude and practice among Nursing students of Rohilkhand Medical college and hospital: A study. *Indian J Dent Sci*. 2013;5:16-18.

[16] Coolidge T, Heima M, Johnson EK, Weinstein P. The Dental Neglect Scale in adolescents. *BMC Oral Health*. 2009;9:2;1-7.

[17] McGrath C, Sham AS, Ho DK, Wong JH. The impact of dental neglect on oral health: A population based study in Hong Kong. *International Dental Journal*. 2007;57:3-8.

[18] Murtomaa H, Laini P, Masalin K. Dental health practices among Finnish adults. *Community Dent Health*. 1984;1:131-39.
[19] Lissau I, Holst D, Friis –Hasche E. Use of dental services among Danish youths: role of social enviornment, the individual, and the delivery system. *Community Dent Oral Epidemiol*. 1989;17:109-16.
[20] Devlin NJ. The Dimension of Dentistry. How much do New Zealanders spend on dental care? *New Zealand Dental J*. 1987;83:66-71.
[21] Burt BA. How useful are cross-sectional data from surveys of dental caries? *Community Dent Oral Epidemiol*. 1997:25:36-41.

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