

Oral Health Knowledge, Attitudes and Practice Behaviour among Secondary School Children in Chandigarh

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ABSTRACT

Introduction: Oral health knowledge is considered to be an essential prerequisite for health-related practices and better oral health. Healthy practices adopted at young age are more sustainable.

Aim: Present cross-sectional exploratory study was planned to assess oral health knowledge and practices of secondary school students in Chandigarh, India.

Materials and Methods: A cross-sectional survey was undertaken amongst 1027 secondary level school students, in Chandigarh, India. After obtaining informed consent subjects were administered pretested self administered questionnaire addressing demographics, knowledge, attitude and practice behaviour of participants. Frequency analysis was done using descriptive statistics.

Results: Survey revealed that only 40% subjects brushed twice daily. About 17% reported use of dental floss and 20% used either mouthwash or tongue cleaner as adjuncts. A total of 58% had knowledge that infrequent brushing led to dental caries, staining of teeth, dental plaque and bleeding from gums. Most of them knew sweets (92.7%) and soft drinks (67.8%) affected dental health. Only 12.9% visited dentist regularly after every 6-12 months.

Conclusion: Efficacy of dental health education can be increased only if health programs are tailored to directly impinge on attitudes of targeted population, especially school children in whom healthy practices can be inculcated easily and be sustained for long times.

Keywords: Dental health, Education, Questionnaire, Survey

INTRODUCTION

Healthy oral cavity is of great significance for an individual's overall health and well-being. Further, it enables an individual to masticate, speak and socialize without any active discomfort or embarrassment [1]. Oral health is now regarded as important as general health with mounting evidence suggestive of oro-systemic health links for major illnesses e.g., cardiovascular disease, diabetes, obesity, arthritis, mild cognitive impairment and even cancer [2-4].

Oral disease is health problem of considerable burden which often leads to pain and more significantly tooth loss; a condition that affects the appearance, quality of life, nutritional intake and consequently the growth and development [5]. Dental caries and periodontal disease are amongst the most widespread oral conditions in human population, affecting from about 67.5% to over 80% of school children in some countries which amounts to a great health burden [6-11]. Fortunately, many of the oral health problems are preventable and their onset is reversible [7]. A number of factors namely; diet, smoking, alcohol, hygiene, stress and exercise are linked to a wide range of high morbidity diseases forming the fundamental basis of common risk factor approach of World Health Organization in order to prevent a range of conditions including oral diseases [12,13]. Among these, hygiene is the single most significant factor when it comes to the prevention of oral diseases.

Oral health knowledge is considered to be crucial for developing healthy behaviours, and it has been shown that there is an association between increased knowledge and better oral health [10,14-18]. Optimum health related practices are more likely to be taken up if an individual feels a sense of better control over their health with better understanding of diseases and their aetiology [1,19]. According to the traditional behaviour change model if

we are able to transmit knowledge into communal environment it generally enhances the attitude and health related behaviour in masses. But the exact relationship between oral health awareness, health related attitudes and behaviour is not so linear and lot of other factors play quite a significant role [1].

In recent years, throughout the world there has been an increased emphasis on the educational approach in the prevention and control of health problems. But imparting knowledge through health promotional programs in a developing country like India, with its second largest population in world and meagre economic and health care resources to cater its rapidly growing population, is a difficult task. Moreover, the low literacy rates further reduce the potency of such efforts [12]. In such a scenario a group target approach is more suitable and given that many risk behaviours stem from the school-age years, school children are one of the important cluster groups. Schools have great and lifelong influence on child's development and well-being [20,21]. Children can be provided with knowledge that helps them in making better choices, adopting healthier lifestyle and to deal with conflicting ideas.

Students are the ideal target group for an early intervention because healthy behaviours and lifestyles developed at younger ages are more sustainable [7]. However, it has been seen in many developing countries that children have limited knowledge of the causes and prevention of oral disease [22-25]. Very few studies have been done to assess the level of oral health-related knowledge and the attitudes and practices of children in India and none in Chandigarh as per the knowledge of the authors. Therefore, the present study aimed at assessing the level of oral health knowledge and practices of secondary school students in Union Territory Chandigarh. Further, objective is establishing a baseline for future assessments to help measure the effectiveness of the activities of health education changing health behaviour.

MATERIALS AND METHODS

A cross-sectional questionnaire survey was conducted amongst 1027 secondary level school students, in Chandigarh, India. A simple random sampling was done to select the students for the purpose of the study and the duration of study was 3 months (April- June, 2013).

A list of schools in Chandigarh was obtained from Education Department and their location noted down. Initially the city was divided into four zones; north, south, east and west as done by Municipal Corporation of Chandigarh for development purposes. Then a school from each zone was selected by simple random sampling to get a representative sample. All students with good general health at secondary school level between the ages of 13-15 years were assessed. Those students with severe general health problems that affect oral health and those with dental emergencies were excluded.

Ethical Approval and Official Permission: Before starting the survey ethical approval was obtained from the institutional ethical committee and official permission was obtained from the authorities (Principal/Director) of the schools included in the study.

Survey Form: A pretested self administered questionnaire containing 37 questions was administered to all study participants. The format of questionnaire was adapted from questionnaire used in the study conducted by Al- Omiri (2006) and language of questionnaire was in English [26]. Pre-testing of the questionnaire was carried out by initially administering the questionnaire to 10 students. Feedback was obtained from participants on any difficulty faced by them in interpretation of questions and any ambiguity within responses was checked. The questionnaire was then modified accordingly and administered to all participants. Questions were divided in to four domains addressing demographics, knowledge, attitudes and practice behaviours of the participants. Item responses were multiple choices.

Methodology: Informed consent was obtained from each participant before the administration of the questionnaire, explaining the need and the purpose of the study.

The response format included multiple choice questions in which the students who agreed to participate and available on the days of survey were instructed to choose only one response from provided list of options. The students were given instructions regarding filling the questionnaire. Furthermore, the investigator was present while the questionnaire was being filled and all queries of participants were addressed by the investigator. The students were asked to fill in the questionnaire without discussion with each other within half an hour time.

Assessment of a participant's oral health-related practices included questions on frequency, duration and time of cleaning, cleaning aids used and replacement, type of toothbrush and brushing technique if used, use of fluoridated toothpaste and amount of dentifrice used. Assessment of participant's oral health-related attitude included items on frequency of visits to a dentist and reasons for visiting and not going to dental office. Assessment of a participant's oral health-related knowledge included questions on benefits of fluoride, necessity of regular dental visits, the role of sugar in causing dental caries, the importance of teeth in the health of body, effects of smoking, alcohol, tobacco, oral habits, misalignment of teeth on oral health, plaque and its effect on gingival and periodontal health and importance of regular dental check-ups.

STATISTICAL ANALYSIS

The data so obtained was compiled and analysed using Statistical Package for Social Sciences (SPSS Inc., Chicago, IL, version 15.0 for windows). Frequency analysis was done using descriptive statistics.

RESULTS

The age of study population ranged between 13 to 15 years with a mean age of 14 years. Data pertaining to the oral hygiene habits among the study population (n=1027), is summarized in [Table/Fig-1]. The survey revealed that approximately 54% of the population studied, brushed their teeth once daily, while 40% respondents brushed twice a day. Tooth brush with dentifrice was the most frequent method of oral hygiene amongst study population. In all 1.7% of study sample reported using floss and 20% used either mouthwash and tongue cleaner as extra aids for oral hygiene. In regard to knowledge about toothbrush and the brushing technique, approximately 93.9% of the subjects were aware that it was important to choose the right toothbrush. Soft bristle toothbrush was used by 53.8% and 32.8% replaced their brush every month. A total of 63.7% were not aware of the type of dentifrice being used and approximately half of the study population did not know the purpose of fluoride (49.9%) and were using full bristle length amount of the toothpaste. Among sample subjects 28.7% were brushing according to the dentist directed brushing method, where as 71.3% of subjects were using non-directed brushing method. A combination of brushing strokes was used by 59.7% subjects during brushing and about 32.7% brushed for more than 2 minutes [Table/Fig-1].

About knowledge and awareness towards general oral health, most of sample subjects were aware that sweets (92.7%) and soft drinks (67.8%) have negative impact on dental health [Table/Fig-2]. Approximately 77.1% of the sample was aware that smoking was not good for dental health. 56.5% and 92.3% of the respondents knew about the detrimental effect of alcohol and paan/ tobacco respectively on oral health. About half the respondents were aware that maligned teeth could affect oral health. A variable proportion of respondents were aware of the adverse effects of various habits e.g., thumb sucking (35.3%), mouth breathing (31.4 %) and nail biting (53.1%). Approximately half of the study population (50.2%) knew health of mouth and dentition had an impact on health of the body also [Table/Fig-2].

Regarding awareness in relation to periodontal diseases 50% respondents did not know the significance of bleeding from gums though most (58%) were aware that infrequent brushing lead to stains, caries and periodontal disease [Table/Fig-3].

[Table/Fig-4] reveals the information about participants' attitudes towards professional dental care. About 97% of the respondents thought care of the teeth were necessary and 77.6% of the study population felt the necessity of regular dental check-up. Thirteen percent respondents visited the dentist regularly after every 6-12 months whereas 48% of the respondents had visited the dentist only in case of dental pain. Approximately 24.9% of the respondents had visited the dentist in the last 6 months and the reason for the last dental visit was dental pain for 33% of the sample. Driving factor for not visiting the dentist for most of respondents was fear of pain (38.5%) or needle (34.2%) and 20.9% reported to have been scared and reluctant at their first visit.

[Table/Fig-5] provides comparative analysis of the oral hygiene habits of study population, who were/ were not regularly visiting dentists.

DISCUSSION

Present investigation aimed to provide a comprehensive overview of the oral health behaviour, knowledge and attitudes among secondary level school students of Chandigarh, which can help the planning and evaluation of the oral health promotion program in this region. This survey found that a high percentage of the children in this study brush their teeth at least once daily (54%) or twice daily (40%). There is consensus in literature that meticulous tooth brushing once per day is sufficient to maintain oral health and prevent caries and periodontal diseases. But most of people

	Frequency	Percentage (%)
Oral hygiene method used		
Toothbrush and paste	994	96.8
Only toothpaste	15	1.5
Dantmanjan	11	1.1
Datun	7	0.7
Additional aid used along with toothbrush		
Mouthwash and tongue cleaner	178	17.3
Mouthwash	205	20.0
Tongue cleaner	212	20.6
Toothpick	68	6.6
Tongue cleaner and toothpick	26	2.5
Mouthwash, tongue cleaner and toothpick	11	1.1
Dental floss and mouthwash	16	1.6
Mouthwash and toothpick	14	1.4
Dental floss and tongue cleaner	6	0.6
None	291	28.3
Frequency of tooth brushing		
Occasionally	14	1.4
Once daily	552	53.7
Twice daily	414	40.3
More than twice daily	47	4.6
Brushing intervals		
Morning before breakfast and at night before bed	311	30.3
Morning after breakfast	29	2.8
Noon after lunch	6	0.6
Morning before breakfast	617	60.1
Night before going to bed	32	3.1
Morning before breakfast and after breakfast	7	0.7
Morning after breakfast and night before going to bed	21	2.0
Morning before breakfast, noon after lunch and night before bed	4	0.4
Duration of brushing		
Less than 1 min	21	2.0
One min	117	11.4
Two min	322	31.4
More than 2 min	336	32.7
Don't know	231	22.5
Toothpaste used		
Fluoridated	116	11.3
Non fluoridated	13	1.3
Herbal	244	23.8
Don't know	654	63.7
Amount of toothpaste used		
Full length of the bristles	490	47.7
Half length of the bristles	409	39.8
Pea size	105	10.2
Just peck	23	2.2
Type of toothbrush used		
Hard bristle	37	3.6
Soft bristle	553	53.8
Medium bristle	383	37.3
Don't know	54	5.3
Toothbrush replaced after		
One month	337	32.8
six month	99	9.6
Three month	301	29.3
When the bristles are worn out	290	28.2
Mouth rinsed after every meal		
Yes	722	70.3
No	154	15.0
Don't know	151	14.7
Brushing technique used		
As directed by the dentist	295	28.7
Nondirected	732	71.3
Direction of the brushing stroke		
Vertical	49	4.8
Horizontal	140	13.6
Circular	225	21.9
Combination of above	613	59.7

[Table/Fig-1]: Oral hygiene habits among the study population (n=1027).

	Frequency	Percentage (%)
Dental caries caused by		
Bug	195	19.0
Improper brushing	136	56.0
Sweets	575	56.0
Occur by itself	21	2.0
Don't know	100	9.7
Fluoride added to toothpaste		
Cheap	5	0.5
Improve taste	25	2.4
Makes teeth resistant to caries	360	35.1
Mouth freshener	125	12.2
Don't know	512	49.9
Caries affects aesthetics		
Yes	888	86.5
No	71	6.9
Don't know	68	6.6
Sweets affect dental health		
Yes	952	92.7
No	42	4.1
Don't know	33	3.2
Soft drinks affect dental health		
Yes	696	67.8
No	221	21.5
Don't know	110	10.7
Smoking affects dental health		
Yes	792	77.1
No	95	9.3
Don't know	140	13.6
Impact of health of mouth and dentition on health of body		
Yes	516	50.2
No	256	24.9
Don't know	255	24.8
Alcohol affect oral health		
Yes	580	56.5
No	200	19.5
Don't know	247	24.1
Paan/ tobacco chewing affect oral health		
Yes	948	92.3
No	27	2.6
Don't know	52	5.1
Tooth decay avoidable		
Yes	956	93.1
No	43	4.2
Don't know	28	2.7
Thumb sucking affect teeth		
Yes	363	35.3
No	346	33.7
Don't know	318	31.0
Mouth breathing affects teeth		
Yes	322	31.4
No	347	33.8
Don't know	358	34.9
Nail biting affect teeth		
Yes	545	53.1
No	210	20.4
Don't know	272	26.5
Maligned teeth affect oral health		
Yes	511	49.8
No	237	23.1
Don't know	279	27.2
Care of teeth necessary		
Yes	997	97.1
No	14	1.4
Don't know	16	1.6
Important to choose right tooth brush		
Yes	964	93.9
No	25	2.4
Don't know	38	3.7
Regular dental checkup necessary		
Yes	797	77.6
No	139	13.5
Don't know	91	8.9

[Table/Fig-2]: Knowledge and awareness of dental and general health among study population (n=1027).

	Frequency	Percentage (%)
Interpretation of bleeding from gums		
Faulty brushing	215	20.9
Inflamed gums	232	22.6
Healthy gums	67	6.5
Don't know	513	50.0
Plaque means		
Food debris	138	13.4
Soft deposits	59	5.7
Hard deposits	58	5.6
Staining on teeth	120	11.7
Don't know	652	63.5
Infrequent brushing leads to		
Dental caries	144	14.0
Staining of teeth	76	7.4
Dental plaque	37	3.6
Bleeding from gums	36	3.5
All of the above	596	58.0
Don't know	138	13.4

[Table/Fig-3]: Awareness about gingival and periodontal health among the study population (n=1027).

	Frequency	Percentage (%)
Frequency of dental visit		
Regularly after 6-12 months	132	12.9
Occasionally	140	13.6
Only in case of tooth ache	494	48.1
Never visited the dentist	261	25.4
During 1st visit to the dentist		
Scared and reluctant	215	20.9
Slightly afraid	171	16.7
Very slightly afraid	129	12.6
Never afraid	287	27.9
Don't know	225	21.9
Last dental visit was		
6 months ago	256	24.9
More than 6 months ago	179	17.4
More than a year ago	100	9.7
1-2 years back	170	16.6
More than 5 years ago	85	8.3
Don't know	237	23.1
Reason for last dental visit		
Toothache	341	33.1
Routine dental check up	162	15.7
Parents/ friend advise	149	14.3
Self-advised	138	13.2
Don't know	237	22.6
Driving factor for not visiting the dentist		
Pain	395	38.5
Fear of needle	351	34.2
Fear of dentist	32	3.1
Fear of dental equipment	192	18.7
Cost	57	5.6

[Table/Fig-4]: Attitude towards professional dental care among study population (n=1027).

	Visit dentist regularly after 6-12 months (12.9%)	Have never visited the dentist (25.4%)
Brush twice daily	62.10%	31.40%
Brush before going to bed at night and in morning	42.40%	23.40%
Mouth rinsed after every meal	81.10%	66.70%
Brush for more than 2 minutes	41.70%	29.90%
Flouridated toothpaste used	19.70%	7.30%
Toothbrush replaced after 3 months	31.10%	23.40%
Infrequent toothbrushing results in dental caries, staining of teeth, dental plaque, gingival bleeding	63.60%	54.80%

[Table/Fig-5]: Comparative analysis of the oral hygiene habits of study population, who were/ were not regularly visiting dentists.

are not able to achieve optimum plaque removal. Therefore, tooth brushing twice daily is recommended by most dentists in order to improve plaque control [27]. The frequency of subjects brushing twice a day is quite in concordance with Humagain, who studied the similar population in rural Nepal, but is quite less than reported by Al Omiri et al., and Zhu et al., [13,26,28]. Twice-a-day tooth brushing seems to be an established practice in several industrialized countries [1,29-31], whereas, in others like Tanzania, Iran and Thailand many studies have reported once-a-day tooth brushing by majority of their participants [32-34]. In India Gupta et al., reported 61.9% while Harikiran et al., reported 38.5% frequency of twice a day brushing. This wide variation when compared to present study can be attributed to varied social and economic conditions within India [17,18]. The use of other recommended oral hygiene methods such as dental floss and mouthwashes was found to be rare. The findings are in concurrence with Al-Omiri et al., and Mathur and Gupta and could be attributed to the lack of oral health education, the cost of such aids socioeconomic status, parental influences or traditional/ religious beliefs of the population concerned [26,35].

On the knowledge on how the teeth should be properly brushed, majority of the respondents used a non-directed brushing method with a combination of brushing strokes. Thus there is need to educate school children on the correct motion for teeth brushing to ensure that the teeth are thoroughly brushed which will reduce or eliminate the chance of oral diseases.

There was lack of awareness regarding periodontal diseases as compared to dental caries as, almost half of the respondents did not know the significance of bleeding from gums and were unaware of the term "dental plaque". The response was quite limited as compared to previously reported by Al Omiri et al., and Humagain in similar populations in North Jordan and Nepal respectively though similar to what has been reported by Gupta et al., [13,17,26]. High awareness of dental caries including its impact on the dentition (86.5% knew dental caries affected aesthetics), cause (56% reported that sweets lead to dental caries) and prevention (93% knew caries could be prevented) in comparison with periodontal health could be attributed to the fact dental caries is more prevalent among children than periodontal disease [13]. This could have had been the reason for the improvement in the respondents' knowledge concerning dental caries as, while attending dental clinics for treatment of the same, they must have obtained more professional counselling in this matter.

Most of the respondents were aware of detrimental effects of sweets, smoking, paan/tobacco on dental health though there was not as much awareness regarding adverse effects of various oral habits. More enlightenment activities need to be done in this area as much of the damage could be prevented by intercepting these habits at young age.

Earlier it was believed that oral infections were localized to the oral cavity and had no association with other systemic systems

except in the case of some associated syndromes and untreated odontogenic abscesses. As evidence of periodontal infection's influence on chronic inflammatory disease states continues to mount, a change in paradigm has dispelled this notion, and a whole new concept of the status of the oral cavity and its link to systemic health and disease has evolved. The participants demonstrated limited awareness of the link between oral health and systemic well-being (50%) which is very less as compared to studies done by Al Omiri et al., Farsi et al., El-Qaderi et al., and Humagain [13,26,36,37]. It is important to lay emphasis on the association between oral health and general health of the rest of the body because this might be helpful in promoting oral health and self-care practice among students as well as the community.

Most of the study subject reported irregular dental attendance (48%) and this finding is consistent with findings of similar studies [10,13,17,18,26]. An astounding finding in this regard was that most participants were aware of importance of regular dental attendance (77%). Some findings in this study might offer an explanation for the irregular dental attendance among the participants. A high proportion of the subjects did not attend or disliked visiting dentists due to fear of needle (34%) or pain (38%). Oral disease has a slow path which can be detected on time by the dentist hence, educating the students in this regard is vital. Frequency of visiting dentist is also determined by the parents of these children and dental attitudes displayed by parents might also offer an explanation of the lack of regular attendance. Thus, parents too should be made to understand why it is important to take the children for routine dental check-up.

These observations can be ascribed to the deficiency of appropriate oral health education programs which might have made the dental treatment redundant.

Better oral hygiene knowledge and practices were found in students who visited dentists regularly which might be due to individual level oral health education and motivation received by them. Thus, key to an informed and motivated public lies in the hands of the profession, as well as the authorities. Our study is limited in the fact that the generalizations from this study may not be applicable to other areas as Chandigarh is unique in its social and demographic factors. Further, there is a need for follow-up to find if the survey itself had any influence on the attitude or knowledge of participants.

Health promotion, with its core ideas of equity and equality, empowerment and advocacy, provides a novel though a complex approach to improve not only general health but oral health also. It shifts the responsibility for health from the formal health care system to individuals, communities and decision-makers at all levels of society. Dental health education should be incorporated into the existing school curriculum. The program for dental health education and various didactic activities should be structured in such a manner as to gain the student's interest and obtain a high priority of social acceptance. The objective should be to maintain that level of acceptance throughout the student's lifetime. The education programs should thus be motivating, vibrant, and closely matched to the learning aptitude established by the child at each educational level. Community group effort can also reinforce interventions to endorse improved oral health. Efforts should be synchronized between school personnel, dental health care professionals, as well as parents to make certain long-term remuneration. In future more surveys on larger scale like that on state level or national surveys should be carried out and the data obtained be used to formulate better dental health programs for our country.

CONCLUSION

This survey furnishes the background data to get insight into the status of awareness of secondary level school students regarding

oral health. The clinical implication of this survey was to emphasize on the need for the oral health education of the school children aiming at improving oral health knowledge and continuous implementation of school oral health promotion programs. As, school age is the right time when the behaviour can still be molded, secondary level students would be the appropriate target group to receive the first organized intervention leading towards correct knowledge along with a positive attitude which is essential to bring about a change in their oral health behaviour. However, the efficacy of such education will be limited if health programs are not able to directly affect the attitudes, and take into consideration various socio-economical and environmental factors of targeted population.

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