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ORIGINAL RESEARCH

Assessment of Oral Hygiene Knowledge, Practices, and Concepts of Tobacco Usage among Engineering Students in Bhubaneswar, Odisha, India

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ABSTRACT

Aim: This study aimed to assess oral hygiene-related knowledge and practices among engineering students of Bhubaneswar city and also to evaluate the concepts about the side effects of tobacco usage among those students.

Materials and methods: The study was conducted using a self-administered, close-ended questionnaire to assess the oral hygiene knowledge and practices and study the concepts on tobacco usage among 362 engineering students of Bhubaneswar city, Odisha, India. The obtained data were statistically analyzed using Statistical Package for the Social Sciences software version 20.0.

Results: This survey found that 26.51% of the students had never visited a dentist. Nearly 43.64% of the participants were cognizant of the fact that improper brushing is the reason of tooth decay. About 47% of the participants consumed alcohol and 32.6% had the habit of chewing tobacco, though 80% were aware that use of smokeless tobacco can impair oral health and cause cancer and use of alcohol has detrimental effect on oral health.

Conclusion: Knowledge with respect to oral health among engineering students of Bhubaneswar city is adequate regarding using fluoridated toothpaste and flosses. However, an unhealthy snacking habit, overusage of toothbrushes, consumption of alcohol, and practicing tobacco habit show the lack of oral health knowledge in these students.

Clinical significance: Our study provides an idea about the present scenario in terms of oral hygiene and tobacco usage in young individuals. This can form the basis for oral health education and tobacco cessation program. Moreover, as the habit of tobacco usage starts early during college life, adequate knowledge about its ill-effects would prevent deadly diseases, such as potentially malignant disorders and oral cancer.

Keywords: Attitude, Engineering students, Knowledge, Oral hygiene, Tobacco usage.

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INTRODUCTION

Oral hygiene is the practice of maintaining a clean oral cavity to prevent dental problems, such as dental cavities, gingivitis, periodontitis, and bad breath. Plaque and calculus are the main causes of gum disease and tooth decay. Proper oral hygiene is not only about clean teeth and fresh breath but it is also one of the best ways to help maintain good overall health. Oral health is a fundamental part of the general health and well-being of an individual. It can be achieved by maintaining a good oral hygiene. On the contrary, many studies have been carried out stating the detrimental effects of tobacco usage on oral health. Smoking and other tobacco products interfere with the normal functioning of cells of periodontium and lead to gum disease.[1,2]

Oral hygiene practices, such as brushing regularly, using fluoridated tooth paste, using aids, such as floss to clean interdental spaces, avoiding in-between meals, changing toothbrush at regular intervals, visiting the dentist regularly, and avoiding tobacco products

holistically assist in accomplishing proper oral health.[1] Despite a decline in dental caries in developing countries, there is still a high prevalence of oral diseases. A dramatic change in the prevalence of dental caries in adolescents of most Western industrialized countries may be due to changing living conditions, adoption of healthy, and improved lifestyle.[3]

The students of today are the future citizens of India. Their attitude and practice on oral health and knowledge about tobacco use play a remarkable role in setting up a better future. Studies have shown a change in the patterns of oral diseases, awareness on oral health, and knowledge and positive attitude toward dental health. Many studies have been carried out on oral health habits, knowledge, and attitude of health professionals.[4-6] The aim of our study was to assess the knowledge on oral hygiene practices and ill-effects of tobacco usage among nonhealth professional students in Bhubaneswar, Odisha, India.

MATERIALS AND METHODS

A modified American Dental Association-recommended oral self-care questionnaire was distributed among 400 students of a private engineering college in Bhubaneswar, Odisha, India. This structured self-administered questionnaire was divided into three parts and contained a total of 16 close-ended questions. The first part consisted of the demographic data. The second part comprised 10 questions about oral hygiene practices and the third part had questions on knowledge about the consequences of tobacco.

Only those students present on the day of the study and those willing to participate were included in the study. The students who were not present on the day and those unwilling to participate were excluded from the study. The nature and purpose of the study was explained to the participants before the survey. The questionnaire was distributed in their respective classrooms and once answered it was collected. Incompletely filled questionnaires (38 in number) were discarded.

The data of the remaining 362 questionnaires were tabulated and statistically analyzed. Statistical analysis of the obtained data was done using Statistical Package for the Social Sciences software, version 20.0. Chi-square test was used to estimate the difference in terms of age, gender, and knowledge scores. $p \leq 0.05$ was considered statistically significant.

RESULTS

Out of the 362 students, 271 (79.4%) were males with a mean age of 21.63 ± 1.81 years and 91 (21.63%) were females with a mean age of 21.30 ± 2.06 years (Table 1). Majority (63.5%) of the participants brushed once a day whereas only 25.4% of the students brushed twice daily. Nearly 45.6% of the students always used fluoridated toothpaste whereas 14.3% have never used. Around 37% have never flossed their teeth. The habit of snacking between meals at a frequency of once a day, twice a day, and more than twice a day was 33.33, 20.99, and 33.70% respectively. Nearly 34.53% of the students changed their toothbrushes once in 2 months and there was a significant difference ($p = 0.002$) between both the genders. Almost 26.51% of the students had never visited a dentist in their lifetime, whereas 27.90, 18.23, and 27.34% had consulted a dentist within 6 months, between 6 and 12 months, and between 1 and 2 years respectively. Around 43.64% of the participants were cognizant of the fact that improper brushing is the reason of tooth decay. The preference of consuming alcohol was higher (47%) than the habit of tobacco (32.6%). Nearly 37.6% of participants were of the opinion that lack of proper brushing and flossing can cause bad breath whereas 22% did not know the reason and 40% answered it wrongly (Table 2).

Table 1: Number and age of the study population

Gender	Total (n)	Percentage of study population	Mean ± SD	p-value
Male	271	79.4	21.63 ± 1.81	Chi-square = 21.09 p = 0.02(S)
Female	91	25.1	21.30 ± 2.06	
Total	362	100	21.55 ± 1.90	

SD: Standard deviation

The concept of the usage of tobacco was assessed by asking six questions to which participants had to respond with "strongly agree," "agree," "disagree," or "strongly disagree." Approximately 86% of the participants agreed that discoloration of tooth is the consequence of tobacco use and the difference was statistically significant ($p = 0.05$) when compared between male and female students. Almost 80% of the students also agreed on the fact that tobacco causes gum diseases. Nearly 91% of the students agreed that smoking increases the risk of cancer and the difference was highly significant between males and females. Approximately 80% were also aware that heavy smoking and use of smokeless tobacco can impair oral health and cause cancer. Around 77% of students were in view that use of alcohol has detrimental effect on oral health (Table 3).

DISCUSSION

Various studies have been conducted to assess the knowledge, attitude, and practices on oral hygiene in students with a background of health sciences.[4-6] Student community all together play a vital role in bringing about a behavioral change in the society.[7] With this in view, the present study was conducted to assess oral

Table 2: Response of the participants on oral hygiene knowledge and practices

Questions	*Options*	*Response of the participants (%)*	*p-value*
Frequency of brushing in a day	Once a day	63.5	0.315
	Twice a day	25.4	
	Thrice a day	5.8	
	After every meal	5.2	
Usage of fluoridated toothpaste for brushing	Always	45.6	0.07
	Often	23.5	
	Rarely	16.6	
	Never	14.3	
Frequency of flossing	After every meal	14.6	0.71
	Once a day	22.9	
	Rarely	25.4	
	Never	37.0	
Frequency of snacking habit	Once a day	33.3	0.24
	Twice a day	21.0	
	More than twice a day	33.7	
	Never	12.2	
Interval for change of toothbrush	Once in 2 months	34.5	0.002*
	Once in 3 months	24.9	
	Once in 6 months	27.1	
	Once in a year	13.5	
Last dental visit	<6 months	27.9	0.54
	Between 6 and 12 months	18.2	
	Between 1 and 2 years	27.3	
	Never	26.5	
Reason for tooth decay	Gutka chewing	31.5	0.74
	Smoking	16.0	
	Improper brushing	43.6	
	Having chewing gum	8.8	
Habit of using tobacco products	Yes	15.2	0.132
	Yes, used to but I have quit	17.1	
	No, I use occasionally	17.4	
	Never	50.3	
Habit of consuming alcohol	Yes	19.9	0.132
	Yes, used to but I have quit	11.6	
	No, I use occasionally	26.8	
	Never	41.7	
Cause of bad breath	Food, such as garlic and onion	33.4	0.61
	Lack of proper brushing and flossing	37.6	
	Hormonal fluctuations	6.9	
	Do not know	22.1	

*$p \leq 0.05$

Table 3: Concepts of participants on tobacco usage

Questions	*Strongly agree*	*Agree*	*Disagree*	*Strongly disagree*	*p-value*
Tobacco usage causes discoloration of tooth	38.4	48.1	9.9	3.6	0.05*
Tobacco usage causes gum diseases	27.3	53.3	13.3	6.1	0.72
Heavy smoking impairs oral health	35.9	49.7	9.4	5.0	0.34
Tobacco smoking increases the risk of oral cancer	44.8	46.4	5.8	3.0	0.00*
Tobacco chewing increases the risk of oral cancer	34.5	47.5	12.4	5.5	0.63
Consumption of alcohol impairs oral health	26.5	50.6	14.4	8.6	0.90

*$p \leq 0.05$

hygiene-related practices and knowledge on side effects of tobacco usage in professional students of a private engineering college.

Among these students, 63.5% brushed once a day which was in consonance with the study by Kumar[7] (66%). A higher percentage (67%) of students brushed twice daily in studies done by Kakkad et al[8] and Peltzer and Pengpid[9] in comparison to our study (25.4%). Few studies also reported similar observation to ours.[10-12] This may be attributed to the lack of oral health knowledge or negligence due to busy study schedule.

About two-thirds (69%) of participants in this study used fluoridated toothpaste, which was higher than a study done by Doshi et al[13] where 48.5% of engineering students and 58.7% of medical students used fluoridated toothpastes. Approximately 55% of engineering students in North Bengaluru and nonprofessional college students in Chennai believe that toothpastes containing fluoride prevent tooth decay, rendering them stronger.[12] This shows the adequate knowledge of the participants regarding the benefits of fluoride in the toothpaste.

Dental flosses are useful aids designed specifically to clean the interdental areas.[14] Approximately 63% of engineering students in our study flossed, out of which 37.5% flossed at least daily which was in consonance with the study done in San Francisco,[15] North-East Ontario,[16] and Iraq[4] where 75%, 44%, and over half of the students respectively, used dental floss on a daily basis. Nevertheless, many studies showed that use of dental floss was not very popular.[7,12,17] Almost 40% of students in Bhubaneswar city were in view that lack of proper brushing and flossing is the reason for tooth decay and bad breath.

Nearly 88% of students in the present study have a habit of snacking, which is much higher than studies by Kakkad et al[8] (49.60%), Kumar[7] (47%), and Prasad and Shankar[10] (33.7%). This could be attributed to the availability of snacks in the vicinity of the college and long breaks between the classes. Still a minority of participants (12.15%) claimed that they did not have a habit of snacking. On a comparative perspective, studies have shown that a low percentage of dentists also have the habit of consuming sugar-containing snacks.[4-6,18]

In the present study, approximately 60% of the students changed their toothbrush within 1 to 3 months in contrast to a higher percentage (80%) seen in engineering and MBA/BBM students of Bengaluru.[17,13] The attitude of regularly changing toothbrush was much lower (10%) in law students of Chennai.[7] Moreover, it was found that females demonstrated a significant positive attitude as compared to male students in terms of change of toothbrushes and the difference was statistically significant ($p = 0.002$). This infers that these students are unaware of the fact that prolonged usage of toothbrushes not only decreases effectiveness in cleaning of plaque but also causes trauma to gingival tissue. They should be educated about the importance of changing of toothbrush at regular intervals.

Dentists play a major role in maintaining overall dental health. Nearly 28% of the population had at least visited their dentist once in < 6 months which was consistent with the result of studies by Doshi et al[13] and Al-Hussaini et al.[19] Almost 27% of individuals had never been to a dentist, which was in consonance with the study done by Gopikrishna et al[17] among engineering students of Bengaluru. A still lower percentage of nonprofessional students (14.1%) had visited a dentist within 1 year, though 73.9% were in opinion that one should visit a dentist once in 6 months.[12] This reflects the poor awareness among the engineering students regarding early diagnosis of dental caries and periodontal diseases and thereby maintenance of overall oral health.

Formidable rates of alcohol abuse have been reported in several studies. In a study by O'Callaghan et al,[20] 70 to 90% of students consumed alcohol regularly in Australia. Another Australian study revealed that 88% of students drank alcohol with 45% of them drinking weekly.[21] In this study, about 45% of students consume alcohol whereas 75% of them agreed that consumption of alcohol impairs oral health. A study by Sharma[22] showed that 38% of students consumed alcohol and 53% of the engineering college students had average knowledge regarding alcohol consumption and its ill-effects. Shavi et al[23] reported that 22.01% of the engineering students in Jaipur consumed alcohol at a sensible level and 23.73% of the students were involved in binge drinking. These educational institutions harbor the majority of young adult population aged between 18 and 24 years, thus playing a substantial role in reducing risky drinking among this age group.

In a study by Jalilvand et al,[24] 52% of the engineering students chewed tobacco in the form of Paan. Berg et al[25] reported a low rate of smoking (21%) in students majoring in engineering. In our study, 32.5% of students had a habit of using tobacco products while 80% of students were in view that usage of tobacco causes discoloration of tooth, gum diseases, and increased risk of oral cancer. Nearly 85% of them were also aware of the fact that smoking impairs oral health and increases the risk of cancer. Almost 18.61% of the engineering students of Jaipur used to smoke tobacco, and nearly 8.50% used smokeless tobacco as reported by Shavi et al[23] and the values were quite low in comparison to our study.

This study was limited by the survey design being self-reported behaviors which may have led to over reporting of oral hygiene practices. The psychological and

socioeconomic factors were not taken into consideration. Moreover, small sample size of 362 students may limit the generalizability of data.

CONCLUSION

Knowledge with respect to oral health among the engineering students of Bhubaneswar city is adequate regarding using fluoridated toothpaste and flosses. However, an unhealthy snacking habit, overusage of toothbrushes, consumption of alcohol, and practicing tobacco habit show the lack of oral health knowledge in these students. We, as dental health professionals, should instill a more positive attitude toward visiting a dentist regularly and warn them against the ill-effects of tobacco. Oral health promotion programs providing education regarding proper eating habits, effective maintenance of oral hygiene, and avoiding tobacco usage can go a long run in improving oral health among the students.

Clinical Significance

Adequate knowledge about oral health and following proper oral hygiene practices have a great clinical significance. Optimal knowledge keeps the mouth clean, thus preventing various oral diseases. Maintenance of proper oral health results in reduction of all gum diseases. Studies have shown that there is a decrease in the incidence of dental caries in people who maintained good oral hygiene. It is also well documented that healthy mouth is essential for a healthy body. Hence, studies like ours would give a correct idea about the present scenario in terms of oral hygiene and tobacco usage in young individuals. This can form the basis for oral health education and tobacco cessation program. Moreover, as the habit of tobacco usage starts early during college life, adequate knowledge about its ill-effects would prevent deadly diseases, such as potentially malignant disorders and oral cancer.

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