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ORIGINAL ARTICLE

Comparison of oral hygiene practices and oral health problems among smoker and non-smoker male adolescents in the Eastern Province of Saudi Arabia

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KEYWORDS

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Abstract *Objective:* To compare oral hygiene practices and self-reported oral health problems among smoker and non-smoker male high school students in Dammam, Al-khobar and Dhahran, Saudi Arabia.

Materials and methods: Cross sectional study design was employed. The study sample (453) was calculated and participants were randomly selected from public high schools. Pilot tested questionnaire was distributed among participants of the study. Descriptive and analytical statistics generated using SPSS version 22. Statistical significance involved using a p-value of <0.05.

Results: The prevalence of smoking among teenagers (15–19 years) was about 20.2%. Almost 61.9% (197) of non-smokers had excellent grades compared to 42% (33) of smokers. About 64.5% (258) of the respondents used tooth brushing and 62.5% (244) used miswak and 23.6% (91) of them visited dentist for regular checkup. The comparison of oral hygiene practices between smokers and non-smokers revealed no statistically significant differences. Almost half of the teenagers had bleeding gums and tooth sensitivity, and were dissatisfied with the appearance of their teeth. Self-reported tooth sensitivity was higher among smokers (64%) compared with non-smokers (43%) (p-value 0.001). Similarly, more smokers exhibited dryness of mouth than non-smokers and the difference was statistically significant (p-value 0.007).

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Conclusion: There is high prevalence of smoking among adolescents. No significant differences were observed between smokers and non-smokers regarding oral hygiene practices. However, tooth sensitivity and dryness of mouth were more common in smokers than non-smokers. Smoking cessation programs should be introduced in schools.

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1. Introduction

Smoking has negative effects on health in general, and it is considered a risk factor for death.[1] In 1999, the annual estimated death rate due to smoking was 4.9 million persons, and this number is expected to increase to 10 million between 2020s and 2030s.[2] Smoking not only causes lung cancer, but it is also related to multiple respiratory diseases.[3] About 70% of chronic lung diseases and 80% of myocardial infarction are caused by tobacco smoking before the age of 50 years.[4] Smoking causes an acute elevation in blood pressure (BP) and heart rate. [5] The risk of ischemic heart disease increases among smokers in developing and developed nations around the world.[6] A cross sectional study involving 27,089 participants from 52 countries found that the use of tobacco can lead to acute myocardial infarction, and different forms and types of smoking such as second hand smoke, tobacco chewing, and beedies have harmful effects on cardiovascular health.[7]

The effect of smoking on oral health ranges from mild condition such as staining to severe form as oral cancer.[8] Smoking can cause brown/black discoloration of teeth, dentures, dental restorations, alteration of taste and smell, and black hairy tongue.[9] It has been reported that pipe and cigar smoking have significant associations with tooth loss and periodontal disease.[10] About 24% of cigarette smokers compared with 8% of non-smokers had periodontal disease in Jeddah.[11] Similarly, studies in Saudi Arabia found that smokers exhibited oral conditions such as smokers melnosis, leukoderma, and leukoplakia,[12] and greater vertical bone defect was observed among smokers compared with non-smokers.[13]

Evidence shows that smokers compared with non-smokers frequently experience more tooth sensitivity, dental and oral pain, social embarrassment, and less commonly visit dentist.[14] Self-reported bleeding gingiva and dryness of mouth was found in 26% and 14% of dental students respectively in Riyadh in 2003.[15] About 80,000–100,000 children worldwide start smoking every day.[16] Approximately 150 million adolescents use tobacco around the world, and half of them will die in later years because of the diseases caused by tobacco use.[17] The secondary school age is considered as a critical period in the formation of the smoking habit.[18] Adolescent smoking frequently continues in adulthood.[19]

A recent study reported that 21.3% of male adolescents were smokers in Madinah region.[20] Fida and Abdelmoneim observed that prevalence of smoking among male secondary school students was 37% in Jeddah.[21] The results of two studies from Riyadh also showed high prevalence of smoking among adolescents. Al Ghobain et al. found that 31.2% of male students were current smokers while Al Nohair reported that 28.6% of secondary school students were smokers in 2011.[22,23] However, other previous studies from Riyadh showed smoking prevalence 13% to 18% among adolescents.[15,24,25] This could be because of increase in smoking trends among secondary school children over a period of a decade. Bassiony conducted a review of several studies about smoking prevalence in Saudi Arabia in 2009, and found that 12–29.8% of secondary school students were smokers.[26]

There is high prevalence of smoking in school children in KSA and detrimental effects of smoking on oral health are well known. However, there is limited data about the comparison between smoker and non-smoker adolescents about their oral hygiene practices and self-perceived oral health problems in the country. Therefore, the objective of the study was to report the perceived awareness of teenagers about oral hygiene practices and oral health problems in male high school students in Eastern province of KSA.

2. Materials and methods

2.1. Study design and participants

The study design is a cross-sectional survey. Male students from public high schools were invited to participate in the study. There are 27 public high schools in Dammam, 7 in Dhahran, and 12 in Khobar.[27] Based on the total male high school student population and using 95% confidence interval, a sample of 453 was calculated.[28] The students were randomly selected using multistage random sampling method from public high schools in Dhahran, Khobar and Dammam. The study protocol was approved by the College of Dentistry, University of Dammam. The school administrators were contacted to grant permission to conduct the study.

2.2. Data collection methods

Self-administered questionnaire was distributed among the study participants to collect data. Questionnaire development occurred in steps to ensure its validity. Researchers developed initial draft of the questionnaire and distributed among three dental public health experts to review if its content was relevant to the main topic of the study and was based on current scientific knowledge. In addition, they also assessed the clarity, applicability and effectiveness of items and as a result, redundant, inappropriate and ambiguous items were removed to ensure content validity of the questionnaire.[29]

Pretesting involved a non-random group of about 20 students to assess face validation of the questionnaire. The process also helped to evaluate structure, content, and style of the questionnaire from respondents' point of view, calculate the time required to complete the questionnaire, assess feasibility in questionnaire administration, and improve the understanding of questions.[30] Minor changes were made to the questionnaire after its pilot testing. The purpose and details

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