Assessment of knowledge of oral health hygiene among coastal guards in the port trust of south Tamil Nadu - A public health awareness survey

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ABSTRACT

Oral hygiene is defined as the practice of keeping the mouth clean and healthy, by brushing and flossing to prevent the occurrence of any gum diseases like periodontitis or gingivitis. The main aim of oral health hygiene is to prevent the buildup of plaque, which is defined as a sticky film of bacteria and food formed on the teeth. The coastal guard is an official who is employed to watch the sea near a coast for ships that are in danger or involved with illegal activities. Coastal guards have high possibilities of being affected by mesothelioma or lung cancer due to asbestos exposure. So, a questionnaire consisting of 20 questions was created and circulated among a hundred participants who were coastal guards, through Google forms. The responses were recorded and tabulated in the form of bar graphs. Out of a hundred participants, 52.4% were not aware of the fact that coastal guards have high chances of developing lung cancer and Mesothelioma. 53.7% were aware of the other oral manifestations of lung cancer other than bleeding gums. Majority of the coastal guards feel that they are given enough information about dental hygiene protocols. Hence, to conclude, oral hygiene habits have to be elaborated using various tools in the right manner to ensure better health of teeth and gums.

INTRODUCTION

Oral hygiene is defined as the practice of keeping the mouth clean and healthy by brushing and flossing, to prevent tooth decay and gum diseases (Ramfjord et al., 1968). It is important that oral hygiene should be carried out on a regular basis to enable prevention of any occurrence of dental diseases (Palati et al., 2020). It is important to start good oral care for infants even before the first tooth comes in. From healthy gums come healthy teeth. The impact of climate change on oral health is also of significant importance. Solar radiations directly from the sun can cause oral precancer and cancer (Sarbeen and Gheena, 2016). The most common type of dental diseases includes gingivitis (Manohar and Abilasha, 2019) and periodontitis due to lack of oral hygiene maintenance (Darby and Walsh, 2009). The coastal guard is a military or naval force, who is solely responsible for safety, order and operation of maritime traffic in neighbouring waters (He, 2009).

Since the Coastal guards are constantly in the sea or coast guarding the borders, they are exposed to high sunlight and UV-light, their visiting the dental clinics is also infrequent owing to the occupational constraint. Hence, the importance of knowledge of oral
hygiene practices is essential for their healthy living.

The main purpose of oral hygiene is to prevent the buildup of plaque, which is a sticky film of bacteria and food formed on the teeth (Buglass, 1995). Plaque adheres to crevices and fissures of teeth. It also generates acids when not removed on a regular basis. The slow decay of the protective enamel surface of the teeth causes cavities and plaque (Flemmig, 1999), which irritates gums and can lead to gum diseases like periodontal diseases and tooth loss as well (Bentzon et al., 2014). Worn tooth enamel or exposed tooth roots as a result of the lack of oral hygiene can cause tooth sensitivity (Gunasekaran and R, 2016). Older people are also more likely to have receding gums, which is a big cause of tooth sensitivity (Palati et al., 2019).

The employment in the Coast Guard shipyard revealed significant mortality from all causes, lung cancer and mesothelioma, which is closely related to asbestos exposure (Krstev et al., 2007). Oral manifestations of lung cancer include a non-healing mass on the surface of buccal gingiva; coughing up of blood and rust-coloured sputum (spit or phlegm) (Bhaskar, 1971). Mesothelioma is a cancer of Mesothelial tissue (Shree et al., 2019), associated especially with asbestos exposure (Bianchi and Bianchi, 2007). Symptoms of mesothelioma include wheezing or dry cough, shortness of breath, anaemia and associated fatigue, which can result in oral manifestations as well (Robinson et al., 2005; de la Maza Borja, 2015).

Coastal guards are at risk of several dental health problems due to their oral hygiene and dietary habits, smoking and alcohol consumption and poor oral hygiene knowledge and motivation (Rosan and Lamont, 2000; Jordan and Sumney, 1973). Coastal guards need better oral hygiene education and care to enable them to manage their oral health in a better way. Life near the sea, under challenging circumstances, is not without stress. The experience from the previous studies (Uma et al., 2020; Hannah et al., 2018) has led us to study and create awareness among coastal guards about oral health and hygiene. Hence, it is important that coastal guards are given complete information about correct oral hygiene protocols and dental hygiene, as well as the advantages for their health of keeping a healthy mouth (Mahdi et al., 2016). The aim of the study was to assess the awareness of coastal guards of the Port Trust of Tuticorin about their oral health and hygiene habits.

MATERIALS AND METHODS

A cross-sectional survey, involving a hundred participants among coastal guards, was conducted on an online platform. A questionnaire comprising 20 questions was created and circulated among coastal guards through Google forms. The questionnaire was a close-ended type. The data manipulation was done using Google forms and analysed on an excel sheet. The data was represented in the form of bar graphs and pie charts.

The analysis was done by collecting the data using an online Google forms-link, which was circulated among the coastal guards. The independent variables of the study are age and sex, whereas the dependent variable is knowledge and occupation. The statistical analysis of the survey was done with the help of SPSS software, and the correlation analysis was done using Chi-square test with the help of SPSS software, the bar graph represents the number of observations produced.

RESULTS AND DISCUSSION

About a hundred participants who were coastal guards were surveyed. 51.2% of the participants visited the dentist a year ago, and 39%, about six months ago and 9.8% of them visited last month. Majority of the respondents have visited the dentist a year ago (51.2%) (Figure 1). Majority of the participants, i.e., 43.9% of the last visited the dentist, since they were called by them for examination and cleaning. 15.9% of the participants consulted the dentist for a general check-up. Majority of them visited the dentist since they were called in for examination or cleaning (43.9%) (Figure 2). On a scale of 0 to 5, 36.6% have rated the healthy gums and teeth. Majority of the respondents have rated the health of their teeth and gums at a scale of 3 (36.6%) (Figure 3). 52.4% of the coastal guards working hours extend to around 12 hours per day, while 40.2% of the participants work hours range from 6 to 8 hours. Majority of the coastal guards' working hours extends up to 12 hours (52.4%) (Figure 4). When the coastal guards were questioned whether they work under conditions with high asbestos exposure, 58.5% responded positively. Majority of the respondents have responded positively (58.5%) (Figure 5). 79.3% used toothpaste and brush as a material for cleaning the teeth, whereas others used dental floss only or both dental floss and toothpaste & brush. Majority of the participants use brush and toothpaste only(79.3%) (Figure 7). About 69.5% of the participants of the survey were not aware of the benefits of an oral examination. Majority of the
respondents have responded affirmatively (69.5%) (Figure 9). Around 70.7% of them brushed their teeth only once a day. 8.5% of the participants never brushed their teeth. Majority of the respondents visited a dentist very rarely (45.1%) (Figure 6). 52.4% of the coastal guards were aware of the risks of the development of lung cancer and Mesothelioma among coastal guards. Majority of the coastal guards are not aware (52.4%) (Figure 10). 57.3% wherever of the term mesothelioma. Majority of the respondents are not aware of mesothelioma (57.3%) (Figure 11), But 46.3% were not aware of the oral manifestations of lung cancer. Majority of the participants are aware of it (53.7%) (Figure 12). 40.2% of the participants assume that not brushing or cleaning teeth can result in decay, gum diseases as well as bad breath. 22% Of them experience discomfort, it comes very often, whereas 57.3% experience pain occasionally. Majority of the coastal guards have responded that not cleaning the teeth regularly can result in bad breath, decay and gum diseases (40.2%) (Figure 8). The toothpick was used by 51.2% of the coastal guards to remove debris from their teeth. Majority of the respondents have opted for toothpicks (51.2%) (Figure 13). The rest used sharp objects or dental floss to remove it. 60.5% are familiar with the fact that, when plaque is not removed, it can result in periodontal diseases. Majority of the participants have responded affirmatively (69.5%) (Figure 14). According to the majority of the participants, coastal guards are being given enough information about oral hygiene protocols. Majority of the respondents have responded positively (85.4%) (Figure 15). A correlation analysis was done between age and other parameters in the study, using the chi-square test. It was depicted in the form of bar charts, p<0.05 was considered to be statistically significant. Chi square test, p = 0.137 (<0.05). Hence, it is not statistically significant (Figure 16). Chi square test p = 0.131 (>0.05), hence it is not statistically significant (Figure 17). Chi square test p=0.009 (<0.05), which is statistically significant (Figure 18). Chi square test p=0.120 (>0.05). Hence, it is not statistically significant (Figure 19). Chi square test p = 0.102 (>0.05) which is not statistically significant (Figure 20). Chi square test p=0.355 (>0.05). Hence, it is not statistically significant (Figure 21). Chi square test p = 0.025 (<0.05), which is statistically significant (Figure 22). Chi square test p= 0.007 (<0.05), which statistically significant (Figure 23).

As mentioned earlier, the majority of the participants that is, about 43.9% last visited the dentist since they were called in by them for examination and cleaning. 15.9% consulted the den-
Figure 5: X-axis - coastal guards who work under asbestos conditions; Y-axis - frequency.

Figure 6: X-axis represents the participant’s frequency of dental visits, and Y-axis represents the frequency.

Figure 7: X-axis represents the material used for cleaning the teeth whereas Y-axis represents the frequency.

Figure 8: X-axis represents the patient’s last visit to the dentist, and Y-axis represents the frequency.

Figure 9: X-axis represents the importance of examination of oral cancer, and Y-axis represents the frequency.

Figure 10: X-axis represents the awareness of coastal guards having high chances of developing lung cancer and mesothelioma, whereas Y-axis denotes frequency.

Figure 11: X-axis represents the awareness of mesothelioma, and Y-axis represents the frequency.

Figure 12: X-axis represents the awareness of oral manifestations of lung cancer, and Y-axis represents the frequency.
Figure 13: X-axis represents the oral hygiene aid used to remove debris from teeth, and Y-axis represents the frequency.

Figure 14: X-axis represents the participant’s awareness of causes of periodontal disease, whereas Y-axis represents the frequency.

Figure 15: X-axis represents the coastal guards being given enough information related to oral hygiene, and Y-axis represents the frequency.

Figure 16: Majority of the coastal guards belonging to age group 30-40 mainly visited a dentist either because they were called in by the dentists for examination & cleaning, or because their teeth were hurting.

Figure 17: Majority of the respondents belonging to the age group 30-40 have rated the health of their gums at 3.

Figure 18: Majority of the respondents belonging to the age group 40-50 have working hours for 12 hrs.

Figure 19: Majority of the participants belonging to the 40-50 age group work under conditions with high asbestos exposure.

Figure 20: Majority of the respondents between age group 30-40 assumed that the effects of not cleaning teeth can lead to bad breath, decay & gum diseases.
Figure 21: Majority of the participants under the 30-40 years age group were aware of the benefits of examination of oral cancer.

Figure 22: The coastal guards belonging to the age group 30-40 are aware of coastal guards being prone to lung cancer and mesothelioma.

Figure 23: Majority of the participants of 30-40 and 40-50 age groups were aware of plaque causing periodontal diseases.

tist for a general check-up. According to a survey, half (48%) of the 16-24-year-olds went to a dentist less frequently than they used to least likely attend a regular dental check-up (Bradnock et al., 2001). On a scale of 0 to 5, about 36.6% rated the health of the gums and teeth at 3. Gum disease is the foremost cause of tooth loss in grown persons. Healthy and strong teeth are reliant on healthy gums. When questioned whether coastal guards work under conditions with high asbestos exposure, 58.5% responded positively. Research proved that employment in the Coast Guard shipyard revealed significant excess mortality, especially lung cancer and mesothelioma, which are both associated with asbestos exposure. 79.3% used toothpaste and brush as a material for cleaning their teeth. 70.7% brushed their teeth only once a day, while 8.5% never brushed their teeth. According to a survey conducted, the most common instrument used to clean teeth was a toothbrush. Almost one-tenth also used a finger for mouth cleaning. None of the participants was using dental floss.

Recent studies also demonstrate that the percentage of people brushing the teeth twice a day in India was very low (Ahad and Gheena, 2016) in comparison to those in other countries (Goryawala et al., 2016). 57.3% of the participants were aware of mesothelioma. Malignant mesothelioma is an aggressive tumour-resistant tomorrow increasing in frequency throughout the world. The main risk factor of this disease is asbestos exposure. Mesothelioma has a usual molecular pathology, with loss of tumour-suppressor genes and consists of a predominant pattern of lesions (Robinson and Lake, 2005). Around 69.5% of the coastal guards were not aware of the benefits of oral examinations like an oral biopsy. Oral Biopsy is indicated for the assessment of any unexplained oral mucosal abnormality that persists despite treatment or the removal of local irritants (Sheriff and Santhanam, 2018). In case of severe oral mucosal diseases, surgery must be carried out (Krishnan et al., 2018). 60.5% of the participants were familiar with the fact that plaque, when not removed, causes periodontal diseases. Periodontitis, which has similar signs to gingivitis, also results in the gum tissue and jaw bone loss. Periodontitis progresses over time and does not produce painful symptoms until the disease reaches later stages of damage. Researchers show or have proved that periodontal disease has become a major public health problem in India. The prevalence of this disease ranges from 50-100%. Therefore, various parts of the Indian subcontinent are under a matter of deep concern (Madan et al., 2014).

The limitations of the study are that it is a preliminary survey, with a limited or constrained study population, and it was conducted through an online platform. The future scope of the study is that it will create awareness among the coastal guards about oral hygiene habits they must practice and follow. Furthermore, studies should also be carried out. Limitations are to be explored in the future.

CONCLUSION

In this survey, awareness was created among the coastal guards about various oral hygiene practices, and they have imparted the importance of maintaining a good oral and general health without any dele-
serious habits as they are at a high risk to develop mesothelioma & lung cancer. The limitations of the survey are that it has less study population; it is a preliminary survey and is conducted through an online platform. The future scope of this survey is to increase awareness among coastal guards about lung cancer and mesothelioma so that we can prevent the deadly disease in our defence personnel.

**Conflict of Interest**

The authors declare that they have no conflict of interest for this study.

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