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Original Research Paper

Periodontology

ASSESSMENT OF THE AWARENESS AMONG THE PEOPLE OF MUMBAI BETWEEN CARDIOVASCULAR DISEASE & PERIODONTAL DISEASE: A QUESTIONNAIRE- BASED STUDY

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ABSTRACT **Background and aims** Periodontitis is an multi – factorial, inflammatory disease, characterized by the loss of connective tissue and alveolar bone. Numerous studies conducted shows a strong correlation that periodontitis is associated with cardiovascular disease. The aim of this study was to critically analyse the awareness among the people of Mumbai regarding the link between periodontal disease and cardiovascular disease. **Material & Methods** A Multi – centre questionnaire-based study was conducted on 824 participants ≥35 years of age from Mumbai, India during the period of December 2017 – January 2020. The questionnaire included 23 items assessing risk factors for periodontal and cardiovascular disease, their diet, and their oral hygiene habits as well as any adverse habits if present. **Results & Conclusion** Our study found extremely low awareness and lack of knowledge among people as well as surgeons of Mumbai and more awareness programs must be undertaken.

KEYWORDS : Periodontitis, Cardiovascular Disease, Questionnaire

INTRODUCTION

In the past two decades India has shown predominant Epidemiological Transition from the Infectious Disease, Diseases of Malnutrition, Maternal and Childhood Diseases to Noncommunicable Diseases like diabetes and Cardiovascular Diseases (CVD).1 Over 80% of CVD deaths occur in low- and middle-income countries (LMIC). Thus, it becomes the leading cause of mortality in India2 likewise in Developed Countries. A quarter of all mortality is attributable to CVD amongst that Ischemic Heart Disease and stroke are the predominant causes and are responsible for >80% of CVD deaths. Despite wide heterogeneity in the prevalence of cardiovascular risk factors across different regions, CVD has emerged as the leading cause of death in all parts of the country, including poorer states and rural areas.

Periodontitis is a chronic, multi – factorial, inflammatory disease, characterized by the loss of connective tissue and alveolar bone. Numerous studies conducted shows a strong correlation that periodontitis is associated with cardiovascular disease3, 4, 5, 6. Many patients with heart disease require dental treatment especially periodontal treatment. Various surveys have suggested that dental disease, over the period of time possibly contribute to the development of atherosclerosis and MI. Considering this inter-relationship, an investigation was carried out to evaluate the awareness amongst the cardiovascular surgeon and population suffering from cardiovascular diseases regarding dental diseases associated as the risk factors with CVD.

Mumbai is the capital city of State Maharashtra, and people all over the country seek jobs and so lives here. With changing lifestyle of people in the metro city & people coming from different background increases the scope of our survey.

Thus, the aim of this study was to critically analyze the awareness among the people of Mumbai regarding periodontal disease and cardiovascular disease.

An investigation was carried out to: -

1. Assess the awareness about periodontal health and cardiovascular diseases.
2. Assess the knowledge of patients having history of cardiovascular disease about periodontal health and its effect and to gather more information related to their dietary habits.
3. To find out whether the Cardiovascular surgeon referred their patients for oral health assessment to Dentist or not.

METHODOLOGY: -

There exists no standard, universally accepted or recommended index to measure oral health knowledge and awareness. Based on series of independent questionnaires the data was collected based on the knowledge and behavioral aspects. The Hiroshima University- Dental Behavioral Inventory (HU-DBI) questionnaire developed by Kawamura has been demonstrated to be useful for assessing patient´s perceptions and oral health behavior and is widely used all around[7].

This is a multi-center cross sectional analytical study with a sample consisting of 824 patients. The questionnaire was prepared in English and regional languages and validated. It was checked for ambiguity. Written consent was taken from those who participated in this survey.

The population included patients reporting to various hospitals and clinics in and around Mumbai as well as 75 Cardiovascular surgeons were also included in the study to assess their knowledge about the association between cardiovascular disease and periodontal health and also if they referred the patients to Dentist during their treatment period. Also, the dietary habits of such patients were analyzed using this questionnaire. Those who were uncooperative or not willing to give consent were excluded from the study. Participation in the survey was voluntary and anonymity was maintained about the personal record. Ethical approval was obtained from the ethical committee of the concerned dental college. In consultation with other authors the questionnaire was prepared by the principal investigator. Reliability of the questionnaire was assessed using Cronbach´s alpha internal consistency coefficient.

A study specific questionnaire consisted of 23 questions which were divided into four parts.

Personal data, History of CVD, Time frame, Medications

currently using as well as whether surgical intervention is done or not.

General questions which include daily oral health practices and for any notable oral changes that they came across after being diagnosed with CVD.

Knowledge and awareness about effect of CVD and its association with regards to periodontal health.

Awareness among the cardiovascular surgeons regarding oral health and CVD and whether they referred the patients to dentists or not for oral screening.

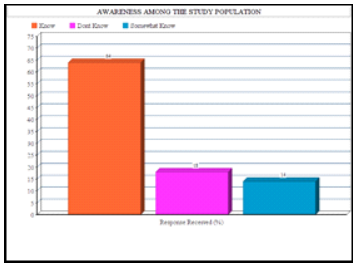
The questionnaires were distributed to the subjects who came to the Department of Periodontology, YMT Dental College as well as 35 other hospitals and 75 cardiovascular surgeons. It took most of the participants 5–10 min to complete the questionnaires. The filled responses were then transferred to the Microsoft excel sheet for appropriate statistical analysis.

Statistical Analysis: -

Collected data was analyzed by frequency percentage and chi-square test. The analysis was carried out by SPSS software version [13].

RESULT: -

Of 824 participants included in the study 64% population absolutely had no awareness regarding the association of CVS with periodontal disease, while 18% of the population were aware of the association and 14% somewhat knew about it. Among 75 surgeons assessed only 21 surgeons referred their patients for Oral health check-up while rest did not. Also Diet analysis showed high fat diet with 65% being Non – Vegetarian and rest being exclusively Vegetarian.



Graph 1: - Awareness among the Study population in %.

DISCUSSION

The goal of the present study was to assess the knowledge, attitude, perception, and awareness among the people of Mumbai city about the link. In the present study majority of the population absolutely had no awareness regarding the association of CVD with periodontal disease, considering most of the population, these patients did not turn to the dental clinic for periodontal treatment, which may increase the risk of CVD. Among 75 surgeons assessed only 21 surgeons referred their patients for Oral health check-up while rest did not. This clearly depicts that the surgeons were unaware of the link between the chronic periodontal condition and CVD.

Like our present study Cesar de Oliveira and colleagues (2012) conducted Scottish Health Survey8 to examine if self-reported tooth brushing behavior is associated with CVD and markers of inflammation (C-reactive protein) and coagulation (fibrinogen). 11,869 men and women from the population living in Scotland were included into the study. The results clearly showed that there was a total of 555 CVD events over an average of 8.1 (SD 3.4) years of follow-up, of which 170 were fatal. In about 74% (411) of CVD events, the principal diagnosis was Coronary Heart Disease. Participants who reported poor oral hygiene had an increased risk of CVD events. They also had increased concentration of both C-reactive protein and fibrinogen.

There are two possible pathways which links cardiovascular disease to periodontal disease.

1) Direct pathways – In this the Oral microbes and their byproducts can gain systemic access via the circulatory system. Geerts and colleagues9 showed that gentle mastication can induce endotoxemia, and this risk was elevated according to an increased severity of periodontal disease. Kinane and colleagues,10 Rajasuo and colleagues,11 have shown that dental procedures and toothbrushing can induce bacteremia's. Recent research indicates that the magnitude of bacteremia after scaling was amplified among patients with periodontitis as opposed to healthy control patients[12,13].
2) Indirect pathways – Here Atherosclerosis has a strong inflammatory component,13 and epidemiologic evidence suggests that increased levels of systemic inflammation are predictive of cardiovascular events14 People with periodontal disease have elevated levels of systemic inflammatory markers, such as C-reactive protein, and treatment for periodontal disease has been reported to decrease it.

Another plausible mechanism connecting oral infection and CVD is molecular mimicry, in which antibodies targeted toward bacterial (including periodontal) species inadvertently cross-react with host cells. For example, heat shock protein 60[12].

Also Diet analysis showed high fat diet with 65% being Non-Vegetarian & rest being exclusively Vegetarian.

The risk for CVD may get prevented by creating awareness among people as well as surgeons.

One limitation of our questionnaire-based study is many of the investigated variables are based on the answers provided by the participants and in some cases these answers might not be accurate. Nevertheless, the developed questionnaire was validated & can be used in larger scale studies to assess the link between Periodontitis & CVD.

CONCLUSIONS

The present study found extremely low awareness of the link not only among the patients but also among the surgeons. The attitude of the patients towards oral health was found to be very casual. Since this study focuses on the population from Mumbai; larger population-based surveys need to be undertaken to achieve generalizability. Also, counselling of the patients regarding association of Oral health and Systemic diseases as well as their diet must be done by incorporating awareness in the hospital setup either by surgeons or by incorporating in-house Dentists or by referring them for oral screening to the Dental Clinic.

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