MAVEN

RESEARCH ARTICLE

A CORRELATIVE CLINICAL STUDY OF NUTRITIONAL STATUS, ORAL HYGIENE AND GINGIVAL HEALTH

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ABSTRACT

Introduction: Poor oral hygiene causes gingivitis and periodontitis. Compre- hensive studies of experimental gingivitis in man and natural history of peri- odontal disease in Sri Lankan labourers established the cause and effect re- lationship of poor oral hygiene and periodontal diseases. It also was observed by various studies that nutritional status affects gingival health.

Objective: To examine the effects of nutritional status on gingival health among two groups of different BMI.

Methods: Two groups of subjects, based on socio-economic status, consisting of one hundred dentists (group A) and one hundred patients (group B) were considered for the study. Nutritional status (denoted by BMI), Oral hygiene status (good, fair, poor) and gingival inflammation (Gingival Index, GI) of all subjects were also assessed.

Results and conclusion: Significant positive correlation was found between oral hygiene and gingival health in dentists with higher BMI. (2017, Vol. 01; Issue 01: Page 1 - 6)

Keywords: Nutritional status, BMI, Gingivitis, Oral hygiene, Periodontitis.

INTRODUCTION:

Poor maintenance of oral hygiene is the primary cause of poor gingival health which leads to gingivitis and periodontitis (1, 2). A wide range of risk factors have now been known that interfere the host which intern modify and cause imbalance from health to disease; these are genetic, environmental, behavioural etc. Among the behavioural factors smoking, exercise, and nutrition are the primary ones. These risk factors are of prime value in the de- velopment and propagation of peri- odontal disease. They act mainly through modification of host re- sponses to bacterial assault leading

to ill effects resulting in host medi- ated tissue damage. Plethora of lit- erature suggests the importance of nutrition for all chronic inflamma- tory disease of our body; but an ef- fect of nutrition in periodontal health has not been addressed properly. Nutrition and mainte- nance of oral hygiene can improve gingival health of patients suffering from gingivitis and/or periodontitis (3-5). Although plaque is the pri- mary cause of periodontal diseases, individuals having same quantity of dental plaque may have different gingival manifestations depending on other factors and also may re- spond differently to similar perio- dontal treatment. So, there must be some factors, in addition to quan- tity and quality of plaque, responsi- ble for clinical outcome of altered gingival health. Maintenance of oral hygiene keeps teeth and gum healthy. At the same time balanced diet will help to boost immune sys- tem and make individual less vul- nerable to oral disease (6, 7). It has also been shown by different stud- ies that socio-economic status, overweight and obesity, repre- sented by increased BMI (BMI >25Kg/m2) could be a risk factor of periodontal diseases (8, 9). System- atic reviews of epidemiological stud- ies from 199 countries showed that more than one billion adults world- wide were overweight in 2008, and of these, 502 million were obese. Obesity can be measured by Body Mass Index (BMI) or waist circum- ference of an individual. Individual having higher BMI adversely affects diabetes, cardiovascular disease and also periodontal disease (10). Group of individuals having higher BMI irrespective of socioeconomic status may have bearing on gingival health (11-14).

MATERIALS AND METHODS:

A total number of 200 subjects were considered in this study (100 in each group) after oral enquiry for their income and education. These two groups of subjects consisting of one hundred dentists (in group A) and one hundred patients (in group B) were made for the study. Annual income below 2 lacks of rupees was the criterion for group B, whereas above 5 lacks of rupees were for group A. Education level was also looked for; persons who could not cross the schooling barrier were considered for group B, and per- sons who had attained university degree were considered for group A. In an institution where this study was conducted, all the dentists au- tomatically fulfil the criterion of ed- ucation for group A, whereas the criterion of education for group B could easily be found in most of pa- tients attending Out Patient De- partment of Periodontics. Weight in kilogram and height in meter were measured for each individual. Body mass index (BMI) of each individual was calculated in kg /m2. Accord- ing to BMI both dentists (group A) and patients (group B) were catego- rised into underweight (BMI <18.5 Kg/m2), normal (BMI 18.5-24.9 Kg/m2), and obese (BMI >25Kg- /m2) (Table 1). Oral hygiene status (good, fair, poor) of all subjects were assessed by simplified oral hygiene index of Green & Vermillion (1964). Gingival Index (GI) with G0 as nor- mal gingiva, G1 as mild inflamma- tion, G2 as moderate inflammation, G3-as severe inflammation was also assessed as per Loe and Silness (1963) (15).

RESULTS AND OBSERVATION:

Display of various categories of subjects as per their BMI and gingi- val health are given in table 1 with the statistical analysis for distribu- tion of mean BMI value according to oral hygiene (Table 2) and gingival health (Table 3). Table 3 shows that difference of mean BMI according to gingival health of patients were not statistically significant (p=0.5791).Difference of mean BMI according to gingival health of den- tists were statistically significant (p=0.0183).

Table 1: Distribution of nutritional status (BMI) and corresponding gingival index in group and in group B

Nutritional sta- tus (BMI)	Gingival index									
	No. of subjects		G-0		G-1		G-2		G-3	
	Gr. A	Gr. B	Gr. A	Gr. B	Gr. A	Gr. B	Gr. A	Gr. B	Gr. A	Gr. B
Under weight (BMI <18.5 kg/m^2)	3	4	3	0	0	2	0	2	0	0
Normal (BMI 18.5-24.9 kg/m^2)	37	53	23	0	14	30	0	19	0	4
Obese (BMI >25 kg/m^2)	60	43	40	0	20	27	0	14	0	2

Table 2: Distribution of mean BMI value according to oral hygiene

	O.H status	Score	Mean	Std. Dev.	Minimum	Maximum	Median	p-value
Patient	Good	9	26.3233	4.5981	20.9200	35.0800	25.0000	0.5685
	Fair	46	25.1400	4.9102	17.6100	41.6200	24.1000	
	Poor	45	24.5307	4.7872	17.3100	39.1600	23.8000	
Dentist	Good	85	26.2172	4.2077	15.4400	45.8300	25.7500	0.0067
	Fair	15	29.4800	4.1845	25.0000	36.1100	27.8700	
	Poor	0	0.0000	0.0000	0.0000	0.0000	0.0000	
Total	Good	94	26.2273	4.2203	15.4400	45.8300	25.6800	0.1001
	Fair	61	26.2072	5.0714	17.6100	41.6200	25.5300	
	Poor	45	24.5307	4.7872	17.3100	39.1600	23.8000	

Table 3: Distribution of mean BMI value according to gingival health

	Gingival health	Score	Mean	Std. Dev.	Minimum	Maximum	Median	p-value
Patient	0	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.5791
	1	60	25.1023	4.8453	17.6100	41.6200	23.9500	
	2	34	25.0965	4.9857	17.3100	39.1600	24.1300	
	3	6	22.9683	3.4018	18.9300	28.1100	22.5650	
Dentist	0	65	25.9594	4.2138	15.4400	45.8300	25.4100	0.0183
	1	35	28.0943	4.2978	20.9500	37.5800	27.5000	
Total	0	65	25.9594	4.2138	15.4400	45.8300	25.4100	0.2937
	1	95	26.2046	4.8499	17.6100	41.6200	25.9500	
	2	34	25.0965	4.9857	17.3100	39.1600	24.1300	
	3	6	22.9683	3.4018	18.9300	28.1100	22.5650	

DISCUSSION:

Periodontitis is highly prevalent in community with increasing number of sufferers in adults and in elderly population. The affliction of perio- dontal disease needs to be con- trolled in these two groups of popu- lation which poses a public health problem.

Recently the oxidative stress has been found to be important to take a great role in molecular tissue damage by altering molecules, such as protein, lipid and DNA. It pro- motes tissue destruction by activat- ing redox-sensitive transcription factors within the cell and this leads to downstream gene expression changes and production of pro-in- flammatory molecules (cytokines) (16).

Many studies have pointed out across positive correlation between periodontal disease and obesity. Though high intake of food is likely to cause obesity in susceptible indi- viduals yet the extent of overweight to obese has not been conclusively proved to be a genuine cause for periodontal inflammation (17). It is also observed unless the individual has a bad oral hygiene the extra weight may not be able to effectively produce the periodontal inflamma- tion (18). The selection of the diet in terms of the right proportions of nu- trients may be a co-founder of the causation of the disease. It is there- fore conceivable that the concomi- tant existence of obesity, bad oral hygiene practice and disproportion diet nutrients are the cause for ini- tiation for periodontal pathology.

CONCLUSION:

The evidence of importance of diet on the effects on periodontal health has been found to be unique of its own nature. The diet has definitely been proved to be a risk factor.

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