

## Evaluation of Impact of Lifestyle and Educational Status on Periodontal Health: A Cross Sectional Study

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### ABSTRACT

**Background:** Improved lifestyle is gaining tremendous importance with reference to maintenance of overall health including periodontal health. The way in which an individual lives may produce behavioral patterns that are either beneficial or detrimental to periodontal health. Educational status also might be interrelated with oral hygiene maintenance of patients.

**Materials and Methods:** A cross-sectional study was conducted on 1568 subjects. Information about their lifestyle, educational status was recorded using a questionnaire and correlated with the periodontal status.

**Results:** The statistical analysis showed significant decrease in periodontitis when education levels ( $P$  value= 0.0043) increased. Also, the prevalence of periodontitis associated with a healthy lifestyle ( $P$  value = 0.0017) is significantly lower when compared to an unhealthy lifestyle.

**Conclusion:** The results suggested that individuals with education had the greatest probability of having a regular pattern of preventive care of periodontal health and healthy lifestyle has a definite role to maintain periodontal health.

**Keywords:** Life style, Educational status, Oral hygiene practices.

### INTRODUCTION

Periodontal disease is a multifactorial infectious disease which are characterized by clinical signs and symptoms. Plaque micro-organisms, immunological and genetic factors play a major role in the etiology of periodontal disease <sup>1</sup>. It is a common disease which contribute directly or indirectly to systemic infections. Periodontal diseases emerge as a risk factor for many other conditions such as infectious endocarditis, coronary disease, premature labor, diabetes etc.

Maintaining a good periodontal health is essential for the patient's well-being beyond the dento-facial

region. To achieve this goal, it is necessary to understand all the factors that can influence periodontal diseases. Earlier studies have associated periodontal health with tobacco smoking, alcohol consumption, physical activity and lifestyle diseases <sup>2,3</sup>. Today there is a growing evidence of detrimental effects of lifestyle characteristics on individual's health. Improved lifestyle is gaining tremendous importance with reference to maintenance of overall health including periodontal health. Numerous epidemiological studies have shown that the diseases of periodontium are among the most common human

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afflictions<sup>4,5</sup>. More emphasis is now directed toward combined influence of lifestyle and educational status along with standard risk factors. At present, there are very few studies which associate the effect of general educational status, lifestyle on the prevalence of periodontal disease. The objective of this article is to evaluate the impact of lifestyle, educational status on the periodontal health status of a randomly selected adult population around Haldia, West Bengal.

## MATERIALS AND METHODS

A cross-sectional study was conducted in the Department of Periodontics, Haldia Institute of Dental Sciences, Haldia, West Bengal, India. A total of 1568 subject were randomly selected depending on following criteria:

- Patients aged 35 years and above
- Presence of more than 15 teeth.

Consent was obtained from all the subjects who participated in the study. Data was collected about their lifestyle, educational status and were assessed by using a questionnaire followed by clinical recordings of inflammation, bleeding on probing, periodontal pockets, and clinical attachment loss. Based on these findings, the patients were categorized into chronic generalized gingivitis (CGG) and chronic generalized periodontitis (CGP). These groups were correlated with following variables:

1. Lifestyle
3. Education level.

### 1. Lifestyle

Lifestyle was measured by means of questions about four behaviors i.e. tobacco-related habits, physical activity, dietary habits, and alcohol consumption which were combined into one lifestyle variable in order to achieve one representative variable which measures a subject's orientation toward health<sup>6</sup>.

- Tobacco related habits were rated positive if the subject had no habits or quit habit for more than 2 years and rated negative if he or she used any form of tobacco regularly or occasionally (positive 1, negative -1).

- Physical activity was high if the subject was used to any physical form of exercise. In other cases it was rated as low (high 1, low -1).

- Dietary habits were based on three factors: how often the subjects ate vegetables, consumed sweets, and used ghee or butter. If the subject chose the healthiest alternative in all three factors, the habit was rated as positive; if there was one unhealthy alternative as moderate and if more than one then as negative (positive 1, moderate 0, negative -1).

- Alcohol consumption was measured by enquiring about the number of alcoholic beverages consumed in a 1-week period. The results were then used to categorize the subjects into nondrinkers, those who consumed less than seven drinks as moderate and those who consumed more than seven drinks as heavy drinkers (nondrinkers 1, moderate drinkers 0, and heavy drinkers -1).

Thus, the total sum score could range from 4 to -4. The combined lifestyle variable was categorized as "healthy" (2-4) and "unhealthy" (-4 to 1).

### 2. Education level

The level of education was assessed based on-

- a. Primary education
- b. Secondary education, and
- c. Graduation or above.

### Statistical Analysis

1. A total of 1568 patients were selected for this study.
2. The data were analyzed using the IBM SPSS Statistics version 22.
3. The results were calculated by using Pearson's chi-square test.
4. The value of  $P < 0.05$  was considered statistically significant.

When the association between the lifestyle and periodontal status was compared, the prevalence of periodontitis decreased in healthy lifestyle compared with unhealthy lifestyle subjects ( $P = 0.0017$ ) as shown in Table 1.

Table 1: Association between lifestyle and periodontal status.

| Lifestyle           | CGG | Percentage | CGP  | Percentage | P-value |
|---------------------|-----|------------|------|------------|---------|
| Healthy lifestyle   | 89  | 28.25      | 252  | 20.11      | 0.0017* |
| Unhealthy lifestyle | 226 | 71.75      | 1001 | 79.89      |         |
| Total               | 315 | 100        | 1253 | 100        |         |

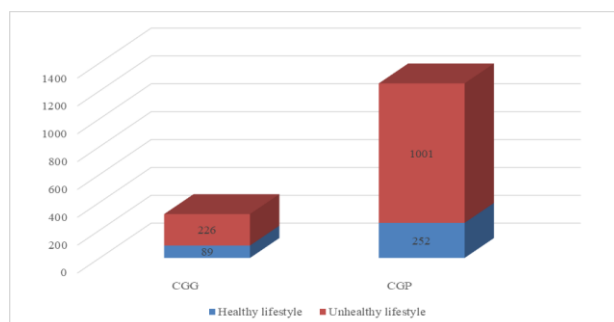


Fig 1: Bar diagram for lifestyle and periodontal status.

When the association between the educational level and periodontal status was compared, a significant decrease in periodontitis was observed as the educational level increased ( $P = 0.0043$ ) as shown in Table 2.

Table 2: Association between educational level and periodontal status.

| Education           | CGG | Percentage | CGP  | Percentage | P-value |
|---------------------|-----|------------|------|------------|---------|
| Primary education   | 143 | 45.40      | 634  | 50.60      | 0.0043* |
| Secondary education | 98  | 31.11      | 423  | 33.76      |         |
| Graduation          | 74  | 23.49      | 196  | 15.64      |         |
| Total               | 315 | 100        | 1253 | 100        |         |

\*Statistically significant

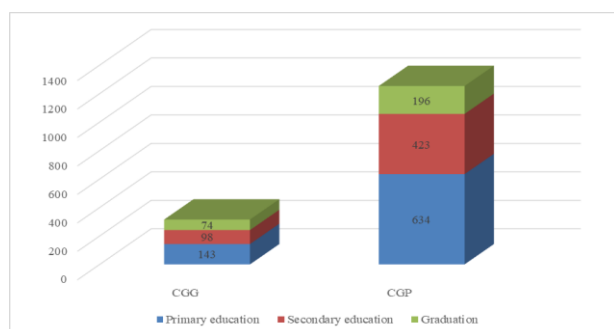


Fig 2: Bar diagram for educational level and periodontal status.

## RESULTS

The results were calculated by using Pearson's chi-square test to calculate the  $P$ -value:

- When the association between the lifestyle and periodontal status was compared, the prevalence of periodontitis had significantly decreased in healthy lifestyle compared with unhealthy lifestyle subjects ( $P < 0.0001$ ) as shown in Table 1.

- When the association between the education level and periodontal status was compared, a significant decrease in periodontitis was observed as the education level increased ( $P < 0.0001$ ) as shown in Table 2.

## DISCUSSION

The first sixty years of the twentieth century could be termed as the "medical era," in which mass vaccination and the extensive use of antibiotics emerged as the dominant approach to health care. Now, the world has entered in "post medical" era, in which physical well-being is determined by certain types of individual behaviors (e.g., smoking), economic factors (e.g., poverty, overeating), and factors influencing the physical environment which are not amenable to medicine <sup>7</sup>.

Healthy lifestyle is currently a trending issue of social science and medical research which provides an interesting knowledge for medical sociology. Leuschen et al. indicated the theoretical potentials of the lifestyle concept for an understanding of new forms of social differentiation that relate to health <sup>6</sup>. According to Milio et al, 'Lifestyles are pattern of (behavioral) choices made from the alternatives that are available to people according to their socio-economic circumstances and to the ease with which they are able to choose certain ones over others.'<sup>8</sup>

The lifestyle changes which lead to lifestyle disorders like cardiovascular disorders, diabetes, and periodontal diseases which make up the bulk of morbidity and psychological disorders such as depression and the repercussions of stress are becoming increasingly important. The first key to prevent many of these conditions was considered to be a change in the health behavior of the individual for e.g. excessive drinking and smoking, overeating and faulty nutrition, and lack of exercise have deleterious effects on health <sup>7</sup>. The way in which an

individual lives may produce behavioral patterns that are either beneficial or detrimental to health. If health is to be improved, actions must be directed at both the individual and environmental factors affecting lifestyle.

Our results showed a positive correlation between lifestyle and periodontal status. This is in accordance with Rajala who had shown a positive association between dental health behavior and lifestyle variables <sup>9</sup>. People with an unhealthy lifestyle have a poor periodontal status because of their aberrant brushing habits and detrimental effects of smoking. According to Revicki, smokers tend to have a more negative lifestyle in general <sup>10</sup>. It means that the association of tobacco with periodontal health was linked not only to poor oral hygiene but also to poor general lifestyle. Studies have shown that females have a better periodontal status and a more positive dental health behavior compared to males. The reasons attributed to this could be esthetics and social pressure on women to look physically attractive thus causing them to lead a healthier lifestyle than men or women may have greater sensitivity towards illness and discomfort and a willingness to seek help <sup>11</sup>.

When education levels were compared to periodontal status, our study showed a positive association between higher education levels and better periodontal status. Gomonal et al. showed that people who had university education were more healthy compared to other individuals <sup>12</sup>. This is in accordance with Richard *et al.* who identified education level also a strong indicator of periodontal status. There must be increase in dental awareness amongst such educated people leading to such results <sup>13</sup>.

## CONCLUSION

Access and utilization of professional health services have been conceptualized and measured as a function of structural characteristics, availability of resources, an individual's knowledge of the system, an individual's ability to use the system, an individual's interest in using the system. Overall, the results suggested that individuals with resources in the form education and a sense of self efficiency had the greatest probability of having a regular pattern of preventive care. The sample of 1568 individuals is a selective sample of those visiting the

Department of Periodontics and may not truly represent the trends in the community on the whole. So the larger, more representative sample would have to be studied for more direct correlations. And also, there is an obvious possibility that the data obtained from a questionnaire might not precisely reflect the actual behavior of the subjects. It is obvious that educational level, awareness and healthy lifestyle has definite impact on periodontal health.

## CONFLICTS OF INTEREST

The authors declare they have no potential conflict of interests regarding this article.

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