

Physical activity and Prevalence of Periodontal Disease in Japanese Factory Workers

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Summary

There is insufficient evidence to demonstrate a causal link between physical activity and morbidity of the disease. So, in this study, we have investigated the correlation by using a large number of Japanese company employees as subjects. Our studies have reported that the less physically active groups have shown higher periodontal disease morbidity rates compared to those who exercise more.

I. Introduction

It has been reported that the development of periodontal disease is strongly associated with age and the degree of oral hygiene. Additionally, it has been revealed recently that the disease is affected by life style, such as smoking or eating habits ¹⁻²⁾.

Against this background, the number of reports on the relationship between the frequency of physical activity and periodontal disease has been increasing ³⁾. Some reports in the U.S. and Japan have reported that the amount of physical activity is negatively correlated with the morbidity of periodontal disease. A report in Finland has shown that the need for treatment of the disease is higher among those who have been physically inactive for a long time. However, since some reports contain defects such as insufficient number of subjects, possibility of bias in subject selection, or inappropriate methods, the amount of epidemiological findings obtained is currently insuffi-

cient. In such studies there is insufficient evidence to demonstrate a causal link between physical activity and morbidity of the disease. So, in this study, we have investigated the correlation by using a large number of Japanese company employees as subjects.

II. Subjects and Method

The subjects were employees of a chemical plant located in Osaka, Japan. Among the employees who received routine health examinations in 2000, those who satisfied the following 3 conditions were selected: 1) Employees between the ages of 20 to 59 years; 2) Those who did not require more detailed examinations other than the routine health examination; 3) Those who were not given a diagnosis of diabetes. Most operated computer-controlled equipment and were not at risk of being exposed to toxic chemicals. The number of individuals ultimately selected were 1,507 men.

The progression of periodontal diseases was

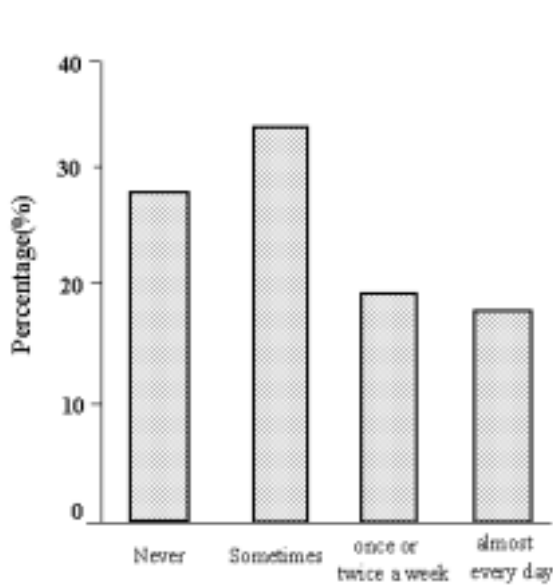


Fig. 1 Physical activity rates among subjects

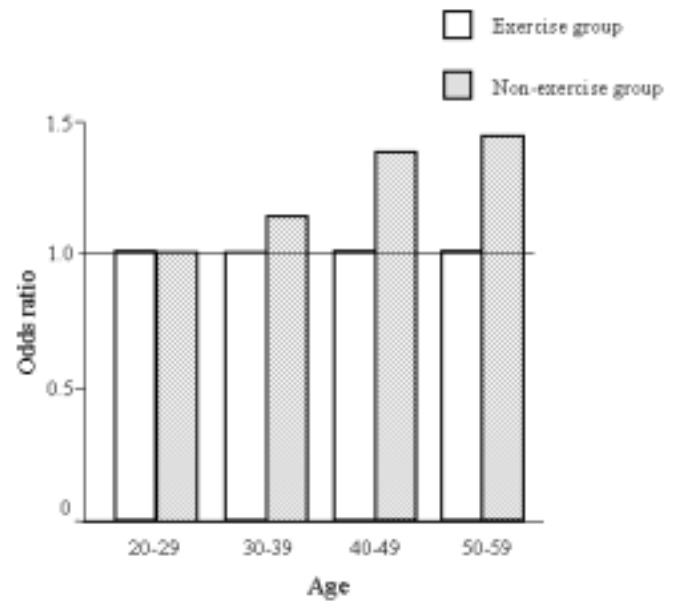


Fig. 2 Results of logistic regression analysis for the correlation of morbidity periodontal disease and physical activity

expressed by using the Community Periodontal Index (CPI), which was based on a method proposed by Ainamo, et al.⁴⁾ Periodontal disease patients were defined as those whose mean CPI value exceeded 3.0 in 6 sites of the mouth.

A multiple choice format was adopted for the questionnaire that was designed to be filled out by each respondent. The questions were on: "frequency of physical exercise" (1, never; 2, sometimes; 3, once or twice a week; 4, almost every day); Logistic regression analysis was also employed (after adjusting for age) to examine the relationship between physical activity and periodontal disease.

The software used for statistical analysis was the Macintosh Statview Ver. 5.0 Computer Program. The level of significance was set at $p < 0.05$. Two groups were set up to analyze the effects of habitual exercise. The first group consisted of persons who stated that they hardly exercised (non-exercise group). The second group included three categories: persons who said that they exercised "once in a while"; persons who said that they "exercised regularly once or twice a week"; and persons who said that they "exercised almost every day" (exercise group).

III. Results and Discussion

The incidence of periodontal disease among subjects was 5.6%. Physical activity rates among subjects were as follows: those who exercise never, sometimes, once or twice a week regularly, or almost everyday 28.3%, 33.9%, 19.5%, and 18.2% respectively. (Fig. 1)

Fig. 2 shows the correlation of morbidity of periodontal disease and physical activity in different age groups. In the 20-29 age group, the probability of periodontal disease morbidity between the exercise and non-exercise groups was almost consistent. On the other hand, in the 30-39, 40-49, and 50-59 age groups, as they become older, those who do not exercise regularly have shown higher probability rates of periodontal disease compared to those who do. However, the difference was not statistically significant.

Recent epidemiological studies⁵⁻⁶⁾ have reported that the less physically active groups have shown higher periodontal disease morbidity rates compared to those who exercise more. Our study has shown the same tendency. It also has shown that the older the subjects are, the more they are affected by the impact

of the exercise habits. This is attributed to the improvement of the insulin sensitivity and gluco-metabolism activity through physical activity affecting the morbidity of the periodontal disease. Further analyses are required.

IV. Reference

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大規模事業所従業員における日常身体活動と歯周病

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欧米の研究では、長期間の身体活動の不活発な者は、歯周病の治療の必要性がより高いことが示されている。しかしながら、対象者数、選択バイアスの可能性など、調査方法に問題があると考えられるものが多く、十分な疫学的知見が得られていないのが現状である。本研究においては、日本人大規模事業所従業員を対象に身体活動と歯周病罹患との関連性を検討した。最終的に選択された対象者は1,507名である。

20 - 29 歳群は運動群と非運動群に歯周病罹患の確立はほぼ同様であったが、30 - 39 歳群、40 - 49 歳群、50 - 59 歳群と加齢とともに、非運動群は、運動群に比較して歯周病の罹患の確率は高値を示した。しかしながら統計的に有意な差異は認められなかった。このメカニズムとしては、身体活動によるインシュリンの感受性や糖代謝の改善が、歯周病の罹患に影響を与えていると考えられる。今後、さらに詳細な解析が必要である。

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