RESEARCH COMMUNICATION

Differences in Lifestyle of a Smoking and Non-smoking Population in Japan

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Abstract

If smokers have different lifestyle including dietary habit in comparison to non-smokers, this difference have an influence on the evaluation of the risks of smoking for tobacco-related diseases or the design of anti-smoking campaigns. In Japan, 1,745 men over the age of 40 were surveyed regarding health consciousness in 1996 and 2,136 men between the ages of 50 and 65 were surveyed regarding dietary habits in 1993-1994. Comparative analysis was done among the smoking and non-smoking groups. The rate of participation in cancer mass-screening for smokers was significantly lower than for non-smokers. Smokers had consumed significantly lower amounts of vegetables, fruits and beans, which are well known beneficial factors for health than non-smokers, and had consumed more salt, salty food and alcohol, which are well known risk factors for health. It is suggested that smokers have disadvantageous characteristics for promoting and maintaining a healthy lifestyle more than in non-smokers. Accordingly, to evaluate the risk of smoking for tobacco-related diseases in epidemiological researches, we should properly treat these data as confounding factors. Furthermore, anti-smoking campaigns should be performed considering these differences.

Asian Pacific J Cancer Prev, **1**, 247-251

Key words: Smoking, risk factor, bias, personality, behavior, dietary habit

Introduction

Tobacco smoking is one of the few environmental risk factors for health that has been proved scientifically (US Public Health Service, 1964; Dawber, 1980; Liu, et al., 1982; Hiramaya, 1987; De Stefani et al., 1987; Hartge et al., 1987; US Department of Health and Human Services, 1988; La Vecchia and Negri, 1989; Hirayama, 1990; McLaughlin et al., 1990; Kobayashi et al., 1991; Ministry of Health Welfare, 1993), so that big anti-smoking campaigns are performed all over the world.

It has been suggested previously that smokers may have several different characteristics including personality and behavior (including dietary habit) in comparison to other people (Epstein et al., 1965; Eysenck, 1991; Thornton et al., 1994; Faruque et al., 1995; Baser et al., 1995; Dallongeville et al.,1998). If this is true, such differences may have an influence on the evaluation of the risks of smoking for tobacco-related diseases or the design of anti-smoking campaigns. There are, however, few reports that surveyed the relationship tobacco smoking and lifestyle in Japan (Suyama and Itoh, 1992; Nakamura et al., 1996). On the other hand, it is well-known that although cigarette smoking prevalence of Japanese men is higher than that of Western people, their mortality or incidence from lung cancer are lower ("Japanese smoking paradox"). Therefore, the characteristics of Japanese smokers may be different to that of Western people. It is very important to clarify the characteristics of Japanese smokers in order to perform anti-smoking campaigns, to evaluate smoking risk, and to solve "Japanese smoking paradox"

In this study, we examined differences in health consciousness and behavior, especially with regard to dietary habits, between smokers and non-smokers in the Japanese population.

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Subjects and Methods

We performed two surveys among the Japanese general population – one was regarding health consciousness and one was regarding dietary habits. Surveys were performed door-to-door employing a questionnaire, in which subjects were asked for responses reflecting their perceived normal behavior for the last 3 years. The subjects were divided into two groups, i.e. those currently smoking (smoking group) and those who were non-smoking (non-smoking group). Ex-smokers were excluded from discussion in this study because of the heterogeneous composition of this group. Furthermore, subjects were excluded if they had the experienced the following disorders: hypertension, diabetes mellitus, cerebral stroke, myocardial infarction, angina pectoris, cancer, as these diseases have an influence on lifestyle, especially dietary habit.

Survey of health consciousness and behavior

We surveyed the health consciousness and behavior for 1,745 men, aged 40 or over, in 16 areas of Aomori Prefecture in northern Japan. The survey period was weekdays from October to December in 1996. The numbers of the subjects and their average ages were: the smoking group 913 and 50.8±9.3 yrs, and the non-smoking group 242 and 52.5±11.3 yrs, respectively.

Survey of dietary habits

We surveyed food intake frequency for 2,136 men aged between 50 and 65 years in 4 areas of Aomori Prefecture and in Joboji-cho (Iwate Prefecture) in northern Japan. A questionnaire which was developed by Hirohata (Tokunaga et al., 1991) was employed, which had two characteristics; the first was a series of questions relating to the frequency of intake for food groups and the second was a series of questions relating to the volume of intake using actual-size photographs of food instead of food models. The survey period was from June 1993 to May 1994. The numbers of the subjects and their average ages were: the smoking group 1,227 and 55.8±5.0 yrs, and the non-smoking group 405 and 57.3±6.8 yrs, respectively.

Statistical analysis

The Student's t test was used to evaluate the difference in food intake between the smoking group and the non-smoking group. Chi-squared test was used to evaluate the difference in rate of answer regarding health behavior, health consciousness and alcohol consumption between two groups. P values < 0.05 were considered to be significant.

Results

Participation in cancer mass-screening within the last 3 years (Table 1)

The rate of participation of the smoking group (80.2%) was significantly lower (P<0.001) than for the non-smoking group (90.5%).

Consideration of dietary balance and missing meals

As for consideration of dietary balance, there were no differences in the rates for each answer between the two groups (Table 2). As for the frequency of missing meals, the rate of answering the question "Once per day" in the smoking group was significantly higher than in the non-smoking group (P<0.01, Table 3).

Time for health promotion (Table 4)

There were no differences between the two groups.

Alcohol consumption (Table 5)

Daily alcohol drinking in the smoking group was significantly higher (P <0.001) than that in the non-smoking group.

Food intake (Table 6)

The smoking group consumed potatoes, vegetables, fruits, beans and milk in significantly lower amounts (P<0.05, P<0.05, P <0.001, P<0.05, P<0.01, respectively) than the non-smoking group. In contrast, the smoking group had a high intake of salt and salty food (pickle) than the non-

Table 1. Participation in cancer mass-screening within the last 3 years

	Participated	Not participated	Total
Smoking group	732 (80.2)[a]	181 (19.8)[a]	913 (100)
Non-smoking group	219 (90.5)	23 (9.5)	242 (100)

( ); %, [a] P<0.001, Significantly different from non-smoking

Table 2. Consideration of dietary balance

	Always & usually	Sometimes	Seldom	Total
Smoking group	396(43.3)	17(1.9)	500(54.8)	913 (100)
Non-smoking group	111(45.9)	5(2.1)	126(52.1)	242 (100)

( ); %

Table 3. Frequency of missing meals

	Once per day	4 or 5 times per week	2 or 3 times per week	Seldom	Total
Smoking group	122 (13.4)[b]	25 (2.7)	150 (16.5)[a]	616 (67.5)[c]	913 (100)
Non-smoking group	14 (5.8)	9 (3.7)	24 (10.0)	195 (80.6)	242 (100)

( ); %, [a] $p<0.05$, [b] $p<0.01$, [c] $p<0.001$, Significantly different from non-smoking group

Table 4. Time for health promotion

	Enough	Insufficient	Almost nothing	Total
Smoking group	257 (33.7)	292 (38.3)	213 (28.0)	762 (100)
Non-smoking group	75 (38.3)	74 (37.7)	47 (24.0)	196 (100)

( ); %, subjects who answered "unknown" were excluded.

Table 5. Alcohol drinking

	Always & usually	Sometimes	Seldom	Total
Smoking group	747 (81.8)[a]	32 (3.5)	134 (14.7)[a]	913 (100)
Non-smoking group	152 (62.8)	12 (5.0)	78 (32.2)	242 (100)

( ); %, [a] $p<0.001$, Significantly different from non-smoking group

Table 6. Food intake (g)

Food	Non-smoking group (405)	Smoking group (1,277)
Rice	5160±938	5032±651
Potatoes	85.7±32.6	63.4±20.3[a]
Vegetables	287.7±68.0	224.2±40.9[a]
Fruits	802.5±292.6	487.9±150.2[c]
Beans	111.0±44.8	99.7±29.2[a]
Pickles	183.7±69.5	195.4±49.7
Milk	335.3±224.2	180.8±100.2[b]
Egg	161.2±52.6	153.2±40.6
Meats	159.8±51.1	136.7±36.3
Raw fish	481.7±155.0	494.4±105.1
Salt fish	58.6±23.8	55.7±16.1
Whole salt	8.3±1.7	9.4±1.2

[a] $p<0.05$, [b] $p<0.01$, [c] $p<0.001$, Significantly different from non-smoking group

smoking group, although the differences were not significant.

Discussion

With regard to cancer mass-screening, the participation rate for smokers is significantly less than that for non-smokers. Three previous similar studies have been conducted in Japan. Fukao (1992) and Kato (1987, 1988) surveyed the lifestyles of participants and non-participants of a mass-screening for stomach cancer or uterine cancer. The results from these studies closely match those of the current study; the participation rate in smokers, which was much lower in smokers compared to non-smokers.

With regard to alcohol consumption, the consumption in the smoking group was significantly higher than that in the non-smoking group. Similar findings to those found in the current study have also been demonstrated in Western countries and Japan previously (Faruque et al., 1995; Baser et al., 1995; Nakamura et al., 1996; Dallongeville et al.,1998).

With regard to dietary habits, the intake of vegetables, fruits and beans, that are thought to be beneficial factors for tobacco-related diseases were lower in smokers by

approximately 20%, 40% and 10% respectively, than in non-smokers. In addition, smokers had also consumed more salt and salty food, which are well known risk factors for health. Similar findings to those found in the current study have also been demonstrated in Western countries and Japan previously (Suyama and Itoh, 1992; Faruque et al., 1995; Baser et al., 1995; Dallongeville et al.,1998).

As mentioned above, it is well-known that the behavioral characteristics of smokers are disadvantageous in that they lead to a higher probability of health hazard, more than in non-smokers, so that many Japanese researchers treated these factors as confounding factors in many epidemiological studies. However, unexpectedly, there were few comprehensive studies on the differences in the behavioral characteristics between Japanese smokers and non-smokers like as the current study. Results similar to the current study have been reported in previous studies in Western countries, so that we should treat health-related behavioral factors as confounding factors in many epidemiological in Japan as well as Western countries. Unfortunately, the objective evaluation of health-related behavioral factors like as dietary habit are extremely difficult. Therefore, at a present, we should carefully estimate the risk of smoking in epidemiological researches, while simultaneously trying to establish the objective measure of these factors.

As mentioned above, there are little differences in characteristics in smokers between Japan and the West, hence it is unlikely that these differences are attributed to the "Japanese smoking paradox". Furthermore, there should be relatively little differences in the manner in which anti-smoking campaigns are conducted in Japan and the West.

Acknowledgement

We thank Professor Tomio Hirohata, Nakamura-gakuen University, for permitting use of the questionnaire for dietary survey. This questionnaire was developed by him and his colleagues.

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Yosuke Kitagawa was born in Nagoya City, Japan in 1975. He is presently a student in the 5th grade at Hirosaki University School of Medicine. After graduation from university, it is his desire to undertake research in epidemiology, and therefore he is currently pursuing his studies in the Department of Hygiene, Hirosaki University School of Medicine.

In addition to his scientific endeavours, Kitagawa-san is famed for his ability to run. He is perhaps the fastest medical student or practitioner in Japan, if not the world at present. He recorded the staggering time of 10.3 seconds in the 100 meter race at the last Eastern Japan Medical Students Sports Competition. If his studies keep pace with his athletic prowess, he will surely become an excellent researcher in the field of sports epidemiology.