

Characteristics of Smoking Cessation in Former Smokers in a Rural Area of Japan

Koshi Nakamura, Masaru Sakurai, Muneko Nishijo, Yuko Morikawa, Hideaki Nakagawa

Department of Epidemiology and Public Health,
Kanazawa Medical University, Uchinada, Japan

Correspondence to:

Dr. Koshi Nakamura,
Department of Epidemiology and
Public Health, Kanazawa Medical
University, 1-1 Daigaku, Uchinada,
Ishikawa 920-0293, Japan.
E-mail: knaka@kanazawa-med.ac.jp

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ABSTRACT

Objectives: Japan has a relatively high prevalence of smoking in men. Despite the importance of behavioral patterns on successful smoking cessation, only limited information is available in Japan. The present study collected data from former smokers in a rural community in Japan in order to identify health status at the time of cessation, predominant motivating factors, and the role of smoking cessation aids in individuals who successfully stopped smoking.

Methods: This cross-sectional study collected data using a self-reported questionnaire from 149 randomly-selected former smokers (119 men and 30 women, aged 20-79 years) who were residents of Nanao, Ishikawa Prefecture, Japan.

Results: Of the male participants, 14.3% quit due to serious personal health problems, including cardiovascular disease, cancer, or respiratory tract disease, while 20.8% of former smokers experienced mild personal health problems or were pregnant at the time of cessation. An approximately equal number stopped smoking due to fear of illness in the absence of immediate health concerns. Compared to personal health motivations, a smaller number of male smokers quit due to anti-smoking social pressure or expense. We also observed a marked increase in former smokers who quit for these reasons in recent years. Smoking lost its appeal in 19.3% of male and 10.0% of female smokers. Approximately, 95% of quitters did not utilize health professional counseling or pharmacological therapy.

Conclusions: Personal health concerns in former smokers in Nanao, Japan were the predominant motivation for quitting smoking, with the vast majority of former smokers achieving successful smoking cessation by themselves.

Key words: Counseling, Japan, motivation, pharmacological therapy, smoking cessation

INTRODUCTION

The harmful effects of smoking on cardiovascular disease (coronary heart disease and stroke), respiratory tract disease, and cancer are well-documented in Caucasian,^[1,2] and Asian

populations.^[3,4] Men in many Asian countries, including Japan, have a higher prevalence of smoking than men in developed Western countries.^[5,6] As a result, 38.6% of deaths due to cancers, 23.4% of deaths due to respiratory tract disease, and 23.0% of deaths due to cardiovascular disease in Japanese men have been attributed to a history of smoking.^[3] In order to reduce the burden of premature illness and death from smoking-related serious diseases in Japanese men, it is necessary to achieve smoking cessation prior to the occurrence of these diseases.

In order to be able to plan an effective strategy for smoking cessation in Japan, it is important to determine the characteristics that led to smoking cessation in Japanese former smokers, including whether or not to have had a new diagnosis or history of smoking-related serious diseases at the time of cessation, motivating factors, and aids that assist individuals to stop smoking. Information is limited on this topic in community-based settings, but not in hospital/clinic-based settings. A Japanese national survey carried out in 1999 reported that the major motivations for smoking cessation were concern and problems related to personal health, although the precise concerns and problems that led to smoking cessation were not described.^[7] Another survey reported on the use of smoking cessation aids in Japanese current smokers who had attempted smoking cessation,^[5] although little is known on this subject in former smokers who successfully quit smoking. The present study, therefore, collected data from Japanese former smokers in a rural community-based setting, with the aim of identifying health status at the time of cessation, the predominant motivating factors, and the role of health professional counseling and pharmacological therapies on smoking cessation.

METHODS

The city of Nanao, which covers an area of 318 km², is located in Ishikawa Prefecture in the central part of Japan and includes semi-industrial, agricultural, and fishing areas. According to a recent census, Nanao has approximately 59,000 residents (28,000 men and 31,000 women).

This cross-sectional study was carried out in July 2010 and collected data on smoking cessation using a self-reported questionnaire. A total of 1,488 candidates between the ages of 20 and 79 years

were selected randomly and stratified according to sex and age using the Nanao City Municipal Government resident registry data. Investigators then visited the home of each candidate to deliver the questionnaire. Of the 1,488 candidates, 310 who had relocated from their residence due to education, work, or hospitalization, or failed to meet investigators after multiple attempts were excluded from the study. The investigators were able to collect questionnaires enclosed in envelopes and written informed consents from 737 of the remaining 1,178 candidates during follow-up visits. Of the 737 participants, 45 participants provided incomplete data. Of the remaining 692 participants, 43.0% ($n = 142$), 36.1% ($n = 119$), and 20.9% ($n = 69$) of men and 10.2% ($n = 37$), 8.3% ($n = 30$), and 81.5% ($n = 295$) of women, were self-identified as either current smokers, individuals who had quit smoking, or individuals who had never smoked, respectively. After excluding the 179 current smokers and the 364 non-smokers, the questionnaires from 149 former smokers were used for the analyses. The present study was approved by the Institutional Review Committee of Kanazawa Medical University for Ethical Issues.

The questionnaire provided to each participant began with questions regarding age, sex and smoking habits, and did not require the participants to write down their name or address. For current smokers and individuals who had never smoked, the questionnaire terminated after this question. However, former smokers were asked to provide the following additional information: (1) age when smoking ceased (years), (2) new diagnosis or history of serious disease such as heart disease, stroke, cancer, pulmonary emphysema, or chronic bronchitis when smoking ceased (yes, or no), (3) main motivation for quitting smoking, (4) health professional counseling, and (5) pharmacological therapy. As multiple possible responses were provided for the third, fourth and fifth questions, the participants were required to select only one choice that most closely represented their situation. Regarding the main motivation for quitting smoking, the closest reason was chosen among the following 8 choices: (i) serious personal health problems (defined in the second question), (ii) mild personal health problems such as hypertension, dyslipidemia, diabetes, mild symptoms of the respiratory tract such as cough and sputum, or

other diseases that have minimal serious effects on vital prognosis, (iii) pregnancy for women, (iv) fear of illness in the absence of immediate health concerns, (v) anti-smoking social pressure, (vi) expense, (vii) loss of smoking's appeal, and (viii) any other motivations. For having undergone health professional counseling, the closest locality was chosen from the following 4 choices: (i) at a hospital/clinic, (ii) at a public health center, (iii) at a workplace or (iv) nowhere. For pharmacological therapy, the closest modality was chosen from the following 4 choices: (i) nicotine patches, (ii) nicotine gum, (iii) any other medications, and (iv) none. Participants who were prescribed smoking cessation aids, but did not use them, were classified as non-users. The duration of smoking cessation prior to study entry was calculated by subtracting the participant's age at smoking cessation from their age at study entry.

The responses to the questionnaire were summarized for the entire population, grouped by sex. The data were then stratified according to the median duration of smoking cessation prior to study entry, in order to determine variation across years when smoking had ceased. A chi-square test was used to compare the summaries between the stratified subgroups. The statistical analyses were performed using the Statistical Package for the Social Sciences Version 12.0J for Windows (SPSS Japan Inc., Tokyo, Japan). All probability values were 2-tailed, and the significance level was set at $P < 0.05$.

RESULTS

Of the 149 former smokers (119 men and 30 women) who participated in this study, 4.7% ($n = 7$) were aged 20-29 years, 13.4% ($n = 20$) 30-39 years, 18.8% ($n = 28$) 40-49 years, 21.5% ($n = 32$) 50-59 years, 20.8% ($n = 31$) 60-69 years, and 20.8% ($n = 31$) 70-79 years. The mean age \pm standard deviation at study entry was 57.2 ± 15.0 years for men and 46.3 ± 11.5 years for women. A total of 26.2% ($n = 39$) of the participants had quit smoking for < 5 years prior to study entry, 18.1% ($n = 27$) for 5-9 years, 26.2% ($n = 39$) for 10-19 years, 18.8% ($n = 28$) for 20-29 years, and 10.7% ($n = 16$) for ≥ 30 years. The median duration for smoking cessation prior to study entry was 10 years.

Of the male former smokers, 14.3% had a new diagnosis or history of serious disease when they had stopped smoking, which was the main motivation for nearly all the individuals in this group [Table 1]. Although the study participants stopped smoking for a variety of motivating factors, the major factors were mild personal health problems, pregnancy, or a fear of illness in the absence of immediate health concerns. Compared to these motivating factors, a smaller number of male smokers quit due to anti-smoking social pressure, expense, and other motivations. In recent years, there was a marked increase in former smokers who quit for these reasons [Table 2]. Some individuals quit smoking due merely to smoking losing its appeal. Approximately 95% of male and female former smokers did not use any pharmacological therapies or health professional counseling to stop smoking.

DISCUSSIONS

A national survey in Japan in 1999 showed that 64.7% and 41.0% of former smokers acknowledged concern or problems related to personal health as motivating factors for stopping smoking, respectively.^[7] These motivations were ranked as the first and second leading factors.^[7] Previous studies in other countries also identified personal health concerns, including mild-to-serious personal health problems and fear of illness in the absence of immediate health concerns, as the predominant motivation for smoking cessation. However, variable prevalences of this composite motivation were observed.^[8] As a previous survey in Japan allowed multiple responses,^[7] some respondents may have chosen both factors. However, these motivations should be evaluated in detail, and therefore, one merit of our study was to refine this disadvantage. As a consequence, our study showed that approximately one-fourth of Japanese former smokers quit smoking due to experiencing mild personal health problems or being pregnant, whereas another one-fourth quit because of fearing illness in the absence of immediate health concerns. Over 10% of individuals who stopped smoking did so at a late stage due to the occurrence of smoking-related serious diseases. Although it is unclear whether smoking cessation awareness may have failed these individuals who developed

Table 1: Characteristics of 149 former smokers in Nanao, Japan, 2010. Data are presented for the entire study population and also grouped by sex.

	Overall (n=149)		Sex		P values*	
			Men (n=119)	Women (n=30)		
New diagnosis or history of serious disease [†] at time smoking ceased						0.02
Presence	12.1%	18	15.1%	18	0.0%	0
Absence	87.9%	131	84.9%	101	100.0%	30
Main motivation for quitting smoking						<0.01
Serious personal health problems [†]	11.4%	17	14.3%	17	0.0%	0
Mild personal health problems [‡]	20.8%	31	22.7%	27	13.3%	4
Pregnancy	2.7%	4	0.0%	0	13.3%	4
Fear of illness in the absence of immediate health concerns	24.2%	36	25.2%	30	20.0%	6
Anti-smoking social pressure	10.1%	15	7.6%	9	20.0%	6
Expense	5.4%	8	3.4%	4	13.3%	4
Loss of smoking's appeal	17.4%	26	19.3%	23	10.0%	3
Other motivations	8.1%	12	7.6%	9	10.0%	3
Undergoing health professional counselling						0.45
At a hospital/clinic	3.4%	5	4.2%	5	0.0%	0
At a public health centre	0.0%	0	0.0%	0	0.0%	0
At a workplace	2.0%	3	1.7%	2	3.3%	1
Nowhere	94.6%	141	94.1%	112	96.7%	29
Undertaking pharmacologic therapy						0.66
Nicotine patches	2.7%	4	2.5%	3	3.3%	1
Nicotine gum	2.0%	3	2.5%	3	0.0%	0
Other medications	0.0%	0	0.0%	0	0.0%	0
None	95.3%	142	95.0%	113	96.7%	29

* Chi-square test was used to compare each characteristic between the two subgroups. † Serious personal health problems included heart disease, stroke, cancer, pulmonary emphysema, or chronic bronchitis. ‡ Mild personal health problems included hypertension, dyslipidemia, diabetes, mild symptoms of the respiratory tract such as cough and sputum, or other diseases that have minimal serious effects on vital prognosis.

serious personal health problems, the awareness of the health risks associated with smoking is much lower in the Japanese population compared to Caucasians, particularly regarding the effects of smoking on cardiovascular disease.^[5,7,9] This unfortunate situation requires public education on the harmful effects of smoking as the aim of smoking cessation programs is to prevent the occurrence of smoking-related serious diseases. Although individuals who stopped smoking due to other motivations were unlikely to be concerned about their own health, almost all of them quit prior to the occurrence of smoking-related serious diseases.

In Japan, smoking remains less restricted in public spaces, and the price of tobacco remains lower than in developed Western countries.^[6,10,11] However, in 2003, the Japanese national government

proclaimed the Health Promotion Law, which requires managers of public facilities to make an effort to protect non-smokers from environmental tobacco smoke.^[12] Greater restrictions have, therefore, been placed on smoking in public spaces in Japan during the recent years.^[11] In addition, the national government is considering increasing the tobacco tax.^[11] Although the results of our study do not imply that more and more Japanese stop smoking due to anti-smoking social pressures or increased cost of cigarettes, our results may be worth taking notice of when considering whether recent and future rigorous policies affect smoking cessation in Japanese current smokers in the next decade. Interestingly, there were male individuals who stopped smoking due to its loss of appeal at the time of cessation. However, only a few previous studies have identified this as a motivation,

Table 2: Characteristics of 149 former smokers stratified by median duration of smoking cessation (yrs) at study entry

	Duration of smoking cessation at study entry				P values*
	≤10 years (n=79) (58 men & 21 women)		≥11 years (n=70) (61 men & 9 women)		
New diagnosis or history of serious disease [†] at time smoking ceased					0.82
Presence	12.7%	10	11.4%	8	
Absence	87.3%	69	88.6%	62	
Main motivation for quitting smoking					<0.01
Serious personal health problems [†]	12.7%	10	10.0%	7	
Mild personal health problems [‡]	20.3%	16	21.4%	15	
Pregnancy	0.0%	0	5.7%	4	
Fear of illness in the absence of immediate health concerns	22.8%	18	25.7%	18	
Anti-smoking social pressure	17.7%	14	1.4%	1	
Expense	7.6%	6	2.9%	2	
Loss of smoking's appeal	11.4%	9	24.3%	17	
Other motivations	7.6%	6	8.6%	6	
Undergoing health professional counselling					0.65
At a hospital/clinic	2.5%	2	4.3%	3	
At a public health centre	0.0%	0	0.0%	0	
At a workplace	1.3%	1	2.9%	2	
Nowhere	96.2%	76	92.9%	65	
Undertaking pharmacologic therapy					0.14
Nicotine patches	5.1%	4	0.0%	0	
Nicotine gum	2.5%	2	1.4%	1	
Other medications	0.0%	0	0.0%	0	
None	92.4%	73	98.6%	69	

* A chi-square test was used to compare each characteristic between the two subgroups. † Serious personal health problems included heart disease, stroke, cancer, pulmonary emphysema, or chronic bronchitis. ‡ Mild personal health problems included hypertension, dyslipidemia, diabetes, mild symptoms of the respiratory tract such as cough and sputum, or other diseases that have minimal serious effects on vital prognosis.

probably due to methodological issues with the questionnaires used in the majority of these studies that provided several choices of motivation.^[8] Less than 10% of individuals who quit smoking identified other motivating factors, which included concerns regarding family health problems or fear of illness, responsibility to others, self-control, or fear of addiction. Our questionnaire did not provide the choice that a former smoker stopped smoking due to the advice of some another person such as health professional, family member or colleague, as we consider this advice is just an opportunity to considering smoking cessation rather than a defined motivation such as personal health concerns, family health concerns or expense. For example, the advice given by health professional

advice usually results in smokers quitting smoking by raising personal health concerns.

In general, the use of smoking cessation aids may depend largely on product availability, which has been limited in Japan.^[6] In addition, the use of these aids may depend on other factors such as aid effectiveness^[13-15] education, motivation to use aids, and physician knowledge of aids. Nevertheless, the great majority of former smokers achieved successful smoking cessation by themselves, which suggests that the self-help is the most common and, possibly, the most important element for smoking cessation.^[16] In this regard, the United States national smoking surveys conducted in 1986^[17] and 2000^[18] estimated that approximately 90% and 80% of former smokers quit smoking without aids,

respectively. It is, therefore, important to keep this fact in mind in individuals who attempt smoking cessation, as well as for health professionals. The National Health and Nutrition Survey in 2008 showed that less than 10% of current smokers who had previously unsuccessfully attempted to stop smoking had undergone health professional counseling or used pharmacological agents.^[5] The use of smoking cessation aids may, therefore, differ only marginally between individuals who successfully quit and those who failed.

Although the community-based setting and random sampling used in this study are major strengths, several limitations should be acknowledged. First, the study participants were limited to residents in one rural area of Japan, with a relatively small sample size. Second, the questionnaire was developed originally by referring to questionnaires used in other relevant studies.^[5,7,8] Although we did not determine the reliability and validity of our questionnaire, we consider that it was as standardized as the questionnaires used in these other studies. The complete data response in the questionnaires by the majority of participants partially justifies this belief. However, we are uncertain whether the participants correctly answered each question by retrospective self-assessment. Fourth, detailed former smoking habits and socio-demographic characteristics were not included in the analysis due to the absence of information. Lastly, detailed medical histories at the time of smoking cessation were not available.

In conclusion, over one-half of Japanese former smokers living in a rural area quit smoking due to personal health concerns. However, the exact health concern varies considerably, with an equally large number of former smokers stopped smoking due to either experiencing mild personal health problems or being pregnant, or of having a fear of illness in the absence of immediate health concerns. The great majority of former smokers appeared to have successfully stopped smoking without undergoing health professional counseling or undertaking pharmacological therapy.

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