

Smoking Behaviors and Attitudes Among School Teachers in Mie, Japan

Takashi Ohida ¹, Yoneatsu Osaki ², Yumiko Mochizuki ¹, Masato Sekiyama ³,
Takeshi Kawaguchi ³, Toshihiro Ishii ¹, and Masumi Minowa ²

We conducted a questionnaire survey of public kindergarten, elementary and high school teachers in Mie Prefecture, concerning smoking habits and attitudes from November 1995 to February 1996. A self-reporting questionnaire was sent to approximately 16,000 teachers and school employees. The questionnaires were collected in a way which took into consideration the privacy of the respondents. A total of 13,998 questionnaires were returned. The percentages of smokers among the teachers were 44.7% for males and 3.1% for females, percentages which are lower than those for the general Japanese population. Almost all of the men and women agreed that anti-smoking education is needed. Most of those who did not feel anti-smoking education was needed were smokers themselves. Seventy percent of both men and women responded that anti-smoking education was a teachers' duty, however, only thirty-six percent of the male and twenty-one percent of the female teachers had actual experience at such education. Finally, almost all teachers wish that schools were totally smoke-free or had a partial ban on smoking and believe that school anti-smoking policies in Japan should be introduced. *J Epidemiol*, 2000 ; 10 : 16-21

smoking, teachers, smoking behaviors, smoking attitudes

It has been pointed out that smoking is the number one cause of cancer ¹, and that smoking is also an important risk factor with respect to non-cancer diseases ². It has been reported that the risk of death due to a variety of diseases has been reported to increase the younger a person starts smoking ³. Therefore preventing adolescents from smoking is an urgent task in anti-smoking policies. However, while in recent years anti-smoking education has been undertaken in Japan, there are no anti-smoking educational programs which target families and the mass media campaign as there are in the United Kingdom ⁴, thus leading one to conclude that Japan is behind other countries when it comes to anti-smoking policies aimed at adolescents. At the government level, developing national targets concerning anti-smoking policies in schools, similar to the U.S. government goals of a smoke-free environment in elementary and junior high schools by 2000 and providing anti-smoking education ⁵, are future issues which must be addressed by

Japan.

There have been many reports stating that the role of teachers, together with that of the family, is important in anti-smoking education ⁶⁻¹², so determining the smoking behaviors of teachers and the state of anti-smoking education are important for future anti-smoking policies targeting Japanese adolescents. However, in Japan the studies on smoking rates among teachers and teacher's awareness of smoking-related problems were conducted in very limited geographical areas ¹³⁻¹⁷. No studies have been done on a larger scale, such as a prefecture-wide study. Furthermore, it has been difficult to obtain the cooperation and understanding of teachers' unions and school principals' associations to conduct surveys on teachers in Japan concerning smoking from the perspective of protecting the privacy of the individual. In the present study, with the aim of identifying problems associated with the promotion of anti-smoking education in schools, we have conducted a questionnaire sur-

Received March 5, 1999 ; accepted May 19, 1999.

¹ Department of Public Health Administration, National Institute of Public Health.

² Department of Epidemiology, National Institute of Public Health.

³ Department of Public Health, Showa University School of Medicine.

Address for correspondence : Takashi Ohida, Department of Public Health Administration, National Institute of Public Health 4-6-1 Shirokanedai, Minato-ku, Tokyo 108-8638 Japan.

vey, while taking into consideration the privacy of the respondents, of all people employed at all public kindergartens, elementary and high schools, and the Education Office of Mie Prefecture.

MATERIALS AND METHODS

In 1995 the numbers of teachers employed in Japan were 100,000 for kindergartens, 430,000 for elementary schools, 270,000 for junior high schools and 280,000 for senior high schools¹⁸⁾. There were also 44,000 teachers in special schools for mentally and physically handicapped children¹⁸⁾.

The subjects in the present study were all employees (teachers and non-teachers) working at public kindergartens, elementary, junior and senior high schools in Mie Prefecture, and the Education Office of the Mie Prefectural Government. In Mie, of all of the teachers, the proportions that were teachers of public facilities were as follows; kindergarten 36% (385/1062), elementary school 99% (6951/6970), junior high school 96% (3861/4032), senior high school 82% (3475/4223), and special schools 100% (631/631).

Prior to starting the survey we obtained the approval of the prefecture's teachers unions, school boards and principals' associations. The questionnaires were then sent to all public kindergartens and elementary, junior and senior high schools. The questionnaires were distributed to all employees at a particular kindergarten or school by a person who was asked to be that institution's contact for the survey.

Questionnaires were collected as follows to preserve the privacy of the individual respondents. The respondents filled in the questionnaires anonymously and then sealed the completed questionnaires in small, unmarked envelopes. These envelopes were then placed in a larger envelope. The names of the respondents were written on the outside of the large envelope. The contact collected the envelopes, removed the small envelopes from the large envelope, and then sent the small envelopes only to us.

The following 6 items were included in the questionnaire;

- (1) Smoking behaviors of the individual respondents up until the present time
- (2) Opinion regarding smoking in the workplace and smoking within the school premises
- (3) Knowledge on smoking
- (4) Opinions regarding the effects of smoking on children
- (5) Practical experiences and opinions concerning anti-smoking education
- (6) Sex, age, affiliation (name of school), subject taught, and duties

Institutional response rates were 98.9% (94/95) for kindergartens, 99.1% (444/448) for elementary schools, 98.3% (174/177) for junior high schools, 93.7% (15/16) for special schools, 80.0% (52/65) for senior high schools, and 83.9%

(68/81) for Education Office. A total of 14,151 questionnaires were returned, 153 of which were discarded for being incomplete. Thus, a total of 13,988 questionnaires were eligible for statistical analysis. However, we limited our analysis to 12,193 school principals, head teachers, teachers, and special school teachers. Since the objective of the study was to examine the smoking behaviors and attitudes towards smoking of teachers who influence attitudes towards smoking among adolescents, we eliminated from the statistical analysis 1805 responses from people who worked in non-teaching positions (office and clerical staffs) as well as teachers who substituted for regular teachers who were on leave (maternity, sickness, and so on). The proportion of teachers included in the statistical analyses in relation to the total number of teachers (including schools which refused to participate), according to type of schools, are as follows; kindergarten 81% (313/385), elementary school 88% (6080/6951), junior high school 83% (3195/3861), senior high school 63% (2163/3475), and special schools 67% (410/631). The overall proportion for elementary, junior high school and senior high school was 80%.

The packaged software (SPSS for Windows) was used to conduct the statistical analysis. The Chi square test was used to analyze the smoking rates by age group, smoking rates by school type and other tests examined in the present study. The 95% confidence intervals are shown for the smoking rates by age group and smoking rates according to school type.

RESULTS

The proportion of smokers according to sex and age group are shown in Table 1. The proportion of smokers (daily smokers plus occasional smokers) was 44.7% for males and 3.1% for females. There was a significant difference ($p < 0.01$) between the proportion of smokers in the 4 groups from 20-59 years, with the 50-59 age group being the lowest. There were also differences in the proportion of smokers according to the type of school (Table 1). There were significant differences ($p < 0.01$) in the proportion among male teachers at elementary, junior high, and senior high schools, with the proportion being the lowest for male senior high school teachers.

Almost all male and female teachers agreed with total or partial bans on smoking in schools (Table 2). A higher proportion of non-smokers supported a total ban on smoking, and the proportion was significantly high for male non-smokers ($p < 0.01$). Meanwhile, the proportion of male smokers was significantly high ($p < 0.01$) among those who supported a partial ban on smoking in schools. In the column in the questionnaire reserved for comments and opinions, many female teachers expressed their discontent concerning the unpleasant effects of smoke in the teachers' room and the adverse effects of smoking on adolescents.

It was found that twenty-one percent of male smokers and

Table 1. Smoking among teachers according to age and type of school.

(); %

	Males					Females				
	Smoke everyday	95% C.I.	Smoke sometimes	95% C.I.	Number of answers	Smoke everyday	95% C.I.	Smoke sometimes	95% C.I.	Number of answers
Age										
20-29	304 (40)	36.7-43.7	53 (7)	5.2-8.8	757	22 (2)	1.0-2.5	22 (2)	1.0- 2.5	1,255
30-39	1,049 (41)	39.5-43.3	104 (4)	3.3-4.9	2,536	43 (2)	1.4-2.4	26 (1)	0.7- 1.6	2,333
40-49	724 (43)	40.6-45.4	52 (3)	2.3-3.9	1,683	47 (2)	1.8-3.2	29 (2)	1.0- 2.1	1,885
50-59	406 (37)	33.7-39.3	32 (3)	1.9-3.8	1,111	6 (1)	0.2-1.9	2 (0)	0- 0.8	576
60+	22 (48)	33.4-62.2	1 (2)	0-6.4	46	0 (0)	-	1 (9)	0-26.1	11
Total	2,505 (41)		242 (4)		6,133	112 (2)		80 (1)		6,060
Significance			*					*		
Type of school										
Kindergarten	0 (0)	-	0 (0)	-	0	1 (0)	0-0.9	2 (1)	0-1.5	313
Elementary school	1,029 (43)	41.0-	95 (4)	3.2-4.8	2,393	56 (2)	1.1-1.9	45 (1)	0.9-1.6	3,687
Junior high school	872 (46)	43.5-	73 (4)	3.0-4.7	1,906	34 (3)	1.7-3.5	17 (1)	0.7-1.9	1,289
Senior high school	524 (32)	29.8-	59 (4)	2.7-4.5	1,633	14 (3)	1.3-4.0	11 (2)	0.9-3.3	530
Special schools	73 (40)	32.6-	14 (8)	3.8-	184	7 (3)	0.9-5.4	4 (2)	0-3.4	226
Educational offices	4 (31)		1 (8)		13	0 (0)		1 (10)		10
Not completed	3 (75)		0 (0)		4	0 (0)		0 (0)		5
Total	2,505 (41)		242 (4)		6,133	112 (2)		80 (1)		6,060
Significance			**					**		

95% C. I. : 95% confidence interval.

Teacher: School principal, head teacher, teacher/instructor, health instructor

*: χ^2 test of 4×2 table of smoking (smoke everyday + smoke sometimes) of 4 groups, 20-59 years old (subjects in 60s excluded)(male: $p < 0.01$, females : $p < 0.05$)**: χ^2 test of 3×2 table of smoking (smoke everyday + smoke sometimes) of 3 groups, Elementary, Junior high and Senior high school(male: $p < 0.01$, females: $p < 0.05$)**Table 2.** Opinions of teachers concerning school smoking regulations according to their own smoking habits.

(); %

	Complete ban	Partial ban	Regulations unnecessary	No answer	Total	Significance
Males						
Smokers	138 (5)	2,056 (75)	531 (19)	19 (1)	2,744 (100)	*
Non-smokers	805 (24)	2,176 (65)	317 (10)	51 (2)	3,349 (100)	
Females						
Smokers	33 (17)	143 (75)	14 (7)	2 (1)	192 (100)	*
Non-smokers	1,275 (22)	4,233 (73)	216 (4)	76 (1)	5,800 (100)	

Smoker: defined as daily smokers + occasional smokers

*: χ^2 test of 2×3 table, excluding not answered (male: $p < 0.01$, females: $p < 0.05$)

five percent of female smokers smoked in the teachers' room even though smoking was banned (Table 3), while eighty-two percent of male smokers and nine percent of female smokers smoked in teachers' rooms which had not banned smoking. In general, males smoked more than females at school.

Almost all males and females agreed that there was a need for anti-smoking education (Table 4). Seventy percent of both males and females replied that teachers were responsible for anti-smoking education, however, the proportion were lower than the proportion of teachers who felt that anti-smoking edu-

cation was necessary. Thirty-six percent of males and twenty-one percent of females had actually taught anti-smoking. However, only fourteen percent of males and eight percent of females replied in a self-evaluation that they were confident of their ability to actually teach anti-smoking education. When we investigated the answers from teachers of junior and senior high schools, where the problem of students' smoking is serious, with respect to teachers' responsibility and practical experience in anti-smoking education, higher proportion of male and female senior high school teachers recognized teachers'

Table 3. Smoking rate in various places in the school according to whether teachers' smoking was regulated (among smokers). ();%

	Males			Female		
	Regulation	No regulation	Total	Regulation	No regulation	Total
Teachers' room	120/ 567(21)	1792/2180(82)	1912/2747(70)	2/ 39(5)	13/153(9)	15/192(8)
Meeting	60/1500(4)	486/1247(39)	546/2747(20)	0/ 73(0)	2/119(2)	2/192(1)
Classroom	9/ 965(1)	9/1782(1)	18/2742(1)	0/ 91(0)	0/101(0)	0/192(0)
His/her room	877/2611(18)	25/ 136(34)	902/2747(33)	38/184(13)	1/ 8(21)	39/192(20)

Male (n=2,724), Female (n=192)

Table 4. Opinions and experiences concerning anti-smoking education and knowledge related to smoking, by sex.

1) Awareness of need for anti-smoking education				
	Feel there is a need	Do not feel there is a need	Others	No answer
Males	86%	9%	4%	2%
Females	90%	5%	3%	2%
2) Opinions regarding whether anti-smoking education is responsibility of teacher or not, by sex				
	Responsible	Not responsible	Neither	No answer
Males	70%	9%	19%	1%
Junior high school (N=1,650)	69%	10%	20%	1%
Senior high school (N=1,550)	75%	8%	16%	1%
Females	72%	6%	22%	1%
Junior high school (N=1,132)	74%	5%	20%	1%
Senior high school (N=482)	79%	2%	17%	2%
3) Experience teaching anti-smoking education, by sex				
	Yes	No	No answer	
Males	36%	63%	1%	
Junior high school (N=1,650)	45%	54%	1%	
Senior high school (N=1,550)	38%	61%	1%	
Females	21%	77%	2%	
Junior high school (N=1,132)	38%	61%	1%	
Senior high school (N=482)	31%	68%	1%	
4) Self-evaluation of ability to actually teach anti-smoking education, by sex				
	Capable	Somewhat capable	Incapable	No answer
Males	14%	54%	30%	2%
Females	8%	51%	38%	3%

Number of responses: Males 6,129, females 6,055

responsibility in anti-smoking education, but not many of them were actually carrying it out. Moreover, a larger proportion of female teachers than male teachers of both junior and senior high schools answered that anti-smoking education is teachers' responsibility, but the proportion of those who had practical experience was smaller. If we look at health and physical education teachers only, the rate was higher for females and almost all teachers had actual experience (Proportion of health and physical education teachers who had actual experience: junior high school : males 72% (217/303), females 70% (78/111), senior high school: males 90% (164/183), females 95% (40/42)). For both males and females, the proportion of teachers with actual anti-smoking education experience was higher for junior and senior high school health and physical

education teachers compared to the teacher population as a whole.

DISCUSSION

The proportion of smokers among teachers in the present study were 44.7% for males and 3.1% for females. The proportion for males was lower than those observed in previous studies (45.9%-60% for males and 2.5%-15% for females in studies conducted in 1980 or later. However, it should be noted that the study which found 60% and 15% for males and females was conducted on health and physical education teachers only)¹³⁻¹⁷. It is believed the difference in smoking prevalence of male teachers between the present study and previous

studies can be explained by the fact that smoking prevalence among the general Japanese population has been decreasing for males and stable for females in recent years according to the yearly Japan Tobacco study on smoking rates¹⁹. Since the present study was started in December 1995, the difference for males can probably be explained based on this overall downward trend.

All of the studies have found that smoking prevalence among teachers is lower than that among the Japanese adult population¹³⁻¹⁷. This trend is not peculiar to Japan. For example, a study conducted in the United Kingdom found lower smoking rates among teachers compared to the overall population as well as compared to other occupations⁶. However, while smoking prevalence among Japanese teachers is lower than that among overall adult population, it is difficult to conclude that the rate is lower than that of other occupations. Oshima et al.²⁰, in a study of various occupations in Osaka (1985), found smoking prevalence of 34-54% for males and less than 10% for females (excluding nurses and telephone operators). The proportion of smokers among Japanese teachers in our study is roughly equivalent to that of specialists and professionals.

The large difference between the proportion of male and female teachers in Japan who are smokers is a peculiar characteristic. Studies in the UK⁷ and Belgium⁹ have shown that prevalences are higher for female teachers than male teachers. Compared to other countries, male smoking prevalence is higher, while female prevalence is lower. Overall smoking prevalence among the general adult population is also higher. This is a distinctive peculiarity of Japan. In Malaysia, another Asian country, the difference between male and female teachers is even larger (males 32%, females 0.2%). This is thought to be because Malaysian society in general does not accept smoking by females²¹, and while perhaps not to the same degree as that in Malaysia, there is a similar tendency in Japanese society of not accepting smoking by female teachers.

However, the low prevalence of smoking among female teachers revealed by this survey may be attributed to the low prevalence of smoking among females in Mie prefecture compared with that of other prefectures. Kawaminami et al.²² calculated the prevalence of National Nutrition Surveys (for five years) conducted by Ministry of Health and Welfare. According to his estimates, the prevalence of among males in Mie is slightly higher than the national average, and that among females is lower. But the number of the subjects used to calculate the smoking in his study was too small to make his estimates statistically significant. So prevalence of smoking among females in Mie is not considered to be much different from the national average.

A vast majority of the teachers agreed on establishing some sort of restrictions or regulations on smoking in schools. As to be expected, a lot of females, who are less likely to smoke,

were supportive of restrictions, and many expressed their displeasure with smoke in the teachers' room and the harmful effects of smoking on minors. Also, as shown in Table 3, virtually all of the teachers recognized the need for anti-smoking education, and it is encouraging that a full seventy percent of the teachers responded that anti-smoking education is a teacher's responsibility.

However, only thirty-six percent of male teachers and twenty-one percent of female teachers had actually instructed their students about the hazards associated with smoking. Even though female teachers recognized the need for anti-smoking education to a greater extent than male teachers, it is disconcerting that females had less experience at actually teaching children about the dangers of smoking than their male counterparts.

The place where smokers light up is also a problem. The fact that twenty-one percent of male teachers smoke in the teachers' room even though smoking is prohibited is not good from the point of view of either making students abide by Japan's law which prohibits smoking by minors or expanding anti-smoking education in schools. Also, smoking areas or smoking rooms should be set up as soon as possible due to the health effects of second hand or passive smoke on teachers who are non-smokers.

Three nationwide studies have been reported in Japan on the smoking behaviors and attitudes of minors²³⁻²⁵. All three reports showed that the smoking rate begins to increase in both males and females in the first year in junior high school, and becomes high in senior high school students. Based on these reports, it is thought that senior high school teachers are facing a more serious teenage smoking problem than junior high school teachers. In fact, in the present study as well, a higher proportion of senior high school teachers responded to a question regarding teaching responsibility that "teachers have a responsibility to educate about smoking" when asked if it was a teacher's responsibility. However, more junior high school teachers actually had experience teaching about the problems associated with smoking. If we limit the discussion to health and physical education teachers, then more senior high school teachers have actually taught about smoking. However, for schools as a whole, it seems that junior high schools are ahead of their senior high school counterparts when it comes to anti-smoking education. It is said that anti-smoking education for minors in Japan is behind that of countries in North America and Europe⁴. Anti-smoking education should not simply be left up to health and physical education teachers, and it goes without saying that the entire school must deal with the issue and that an improvement in the environment surrounding students is necessary. It is obvious that anti-smoking education will have little effect if adults such as parents and teachers who are in contact with children on a daily basis are smokers. Therefore, first and foremost smoking should be banned in

schools, and in the very least teachers should not be seen smoking by students.

The important role to be played by teachers in anti-smoking education has been mentioned not only in other countries, but also in reports in Japan⁶⁻¹²⁾. However, we can only conclude from the results of the present study that the anti-smoking policies of Japanese teachers are very much "behind the times". Therefore, we have now reached a point where the Japanese government must consider political measures to deal with smoking among teachers.

ACKNOWLEDGMENT

We wish to express our thanks to Shuji Hashimoto Ph.D.(The University of Tokyo, School of Health Sciences and Nursing), and Fumio Kobayashi M.D., Ph.D.(Aichi Medical University, Department of Health and Psychosocial Medicine) for their very helpful suggestions. This survey was supported by through a Grant for Health Science received from Japan Health Promotion and Fitness Foundation in 1995.

REFERENCES

1. Trichopoulos D, Li F, Hunter D. What causes cancer? *Scientific American*, 1996; Sep: 80-87.
2. Ministry of Health and Welfare. Smoking and Health: A Report on Smoking and Health Problems. Tokyo: Japan Health Promotion and Fitness Foundation, 1993;40-185. (In Japanese)
3. Hirayama T. Life-style and Mortality. A Large-Scale Census-Based Study in Japan, Basel, Karger, 1990.
4. Minagawa K. Anti-smoking education in schools. *Hoken No Kagaku*, 1994; 36: 83-87. (In Japanese)
5. American Public Health Association. Health Communities 2000 Model Standards. Guideline for Community Attainment of the Year 2000 National Health Objectives. Washington. American Public Health Association, 1991
6. Higgins C, Dunn J, Warmack D. Comparisons of attitudes of smoking and non smoking teachers toward smoking education in schools and health consequences of smoking. *Health Education*, 1983; Jan/Feb: 24-27.
7. Charlton A. Teachers' smoking habit. *Community Med*, 1984; 6: 273-280.
8. Bewley B, Johnson M, Banks A. Teachers' smoking. *J Epidemiol Community Health*, 1979; 33: 219-222.
9. Frydman M, Lynn R. Smoking habits. The prevention role of teachers and general practitioners. *J Environ Pathol Toxicol Oncol*, 1993; 12: 161-165.
10. Chen T. The effect of the teachers smoking behavior on their involvement in smoking education programs. *J Sch Health*, 1975; 45: 455-461.
11. Osaki Y, Minowa M, Kimura H. Correlates of cigarette smoking among junior and senior high school students in Japan. *Jpn J Public Health*, 1993; 40: 959-968. (In Japanese with English abstract)
12. Minowa M. Significance of measure to prevent and control smoking by juveniles. *Jpn J Public Health*, 1995; 42:361-365. (In Japanese)
13. Minagawa K. Educator's awareness regarding smoking and health. *Niigata Daigaku Kyoikugakubu Kiyō*, 1983; 24: 591-600. (In Japanese)
14. Kawakami, K. Smoking behavior and attitudes among high school teachers. *Hokkaido Kyoikudaigaku Kiyō*, 1987; 38: 59-73. (In Japanese)
15. Yokota B. Actual state of smoking by physicians and teachers: Aiming at solidarity in anti-smoking education. *Nippon Iji Shinpo*, 1988; 3337:95-97. (In Japanese)
16. Shimamura K, Satani Y, Kusano F. Anti-smoking measures to decrease the number of new smokers. *Jpn J Public Health*, 1994; 41(suppl.): 304. (In Japanese)
17. Minagawa K, Kawabata T. Recommending anti-smoking education, 303-304, Gyosei, Tokyo, 1993. (In Japanese)
18. Ministry of Education, Science, Sports and Culture. Report of a Statistical Study of School Teachers in 1995, Tokyo: Ministry of Education, Science, Sports and Culture, 1997. (In Japanese)
19. Japan Tobacco Industry Incorporated. Nationwide Cigarette Smoking Survey in 1995, Tokyo: Japan Tobacco Industry Incorporated, 1995. (In Japanese)
20. Oshima A, Nakamura M. Cigarette smoking among some occupational groups in Osaka Prefecture. *Jpn J Public Health*, 1988; 35: 527-530. (In Japanese)
21. Ismail, Y, Mohammand, H. Smoking habit and attitudes among secondary school teachers. *Southeast Asean J Trop Med Public Health*, 1994; 25: 74-79.
22. Kawaminami K, Minowa M. Prevalence of smoking among general population, by sex, occupation and prefecture, based on the figures of National Nutrition Surveys during a period of five years. *J Health and Welfare Statistics*, 1996; 43: 9-14. (In Japanese)
23. Osaki, Y, Minowa M. Nationwide survey of smoking prevalence among school students in Japan. *Jpn J Public Health*, 1993; 40: 39-48. (In Japanese with English abstract)
24. Ichimura, K, Watanabe M, Okada K, et al. Smoking behavior among adolescents in Japan: Results from the study of Japan adolescent smoking survey (JASS). *Jpn J School Health*, 1992; 34: 319-328. (In Japanese with English abstract)
25. Kawabata T, Nakamura M, Oshima A, et al. Smoking and alcohol drinking behavior among Japanese adolescents: Results from "Japan know your body study." *Jpn J Public Health*, 1991; 38: 885-899. (In Japanese with English abstract)