

TOBACCO SMOKING HABITS AMONG A CROSS-SECTION OF RURAL JAPANESE NURSES

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Key words: Japan, nurse, smoking, tobacco, epidemiology

ABSTRACT

Background:

Despite a high community smoking rate, few investigations of tobacco usage among Japanese nurses have been conducted in rural areas, particularly those in the southern islands.

Aim:

The aim of this research was to investigate the epidemiology of tobacco smoking among a previously understudied group of rural Japanese nurses.

Design:

A self-reporting questionnaire was adapted from previous investigations and distributed to a complete cross-section of 1162 nurses from a large teaching hospital in southern Japan (response rate: 74.0%).

Results:

A total of 10.9% (95% Confidence Interval: 9.0-13.2) were current smokers, with a further 2.9% (95% CI: 2.0-4.3) being ex-smokers. When stratified by gender, the prevalence of smoking was 10.8% (95% CI: 8.9-13.1) among females, and 18.7% (95% CI: 6.6-43.0) among males. The median number was 10.0 cigarettes per day for a period of 10.0 years. When stratified by age, the highest smoking prevalence (16.4%) was observed among nurses aged between 45 and 50 years. In relation to career length, the highest smoking prevalence (13.3%) was demonstrated among those who had worked between 6 and 10 years.

Conclusions:

Overall, our study suggests that around 11% of rural nurses in southern Japan currently smoke tobacco. When stratified by gender however, the prevalence among male nurses was almost double that

of their female counterparts. Although interventions to reduce smoking are clearly needed in this region, interventions will need to consider the underlying social and cultural motivations for tobacco usage among Japanese people, in general.

INTRODUCTION

Japan has one of the highest smoking rates of any industrialised nation, with roughly one third of all adults being current tobacco users (World Health Organization 2005). Almost half of all Japanese men smoke, while the prevalence rate among women has also risen in recent years, from being almost negligible two decades ago (Simpson 2003) to around 12% in 2002. Annual per capita cigarette consumption has undergone a simultaneous increase, rising from 2810 cigarettes per capita in 1970, to 3023 by the year 2000 (WHO, 2005). Distinct correlations have been shown to exist between various demographic factors and smoking rates among Japanese citizens, particularly socioeconomic status (Fukuda et al 2005). In terms of health effects, smoking now represents an import risk factor for coronary heart disease among Asians (Iso et al 2005), and probably increases the risk of breast cancer among pre-menopausal Japanese women (Hanaoka et al 2005). By the end of last century, around 29000 Japanese men and 4000 women aged between 35 and 69 were dying every year of smoking related diseases (WHO 2005). For a country which made such impressive gains in living standards and longevity last century, tobacco smoking now represents a significant cause of preventable disease as Japan enters the new millennium.

Being at the forefront of health care, nurses occupy an important position as both health care providers and as role models for appropriate health behaviour. Nevertheless, nurses have often had a smoking prevalence rate higher than that of the community in which they live

(Adriaanse et al 1991). Historical research from the United States of America between the 1950s and 1970s for example, showed that large proportions of the nursing population were smokers (Garfinkel and Stellman 1986). Contemporary investigations however, suggest that the smoking rate among nurses is falling in many Western countries (Hay 1998), but remains rather high in other parts of the world (Torres Lana et al 2005; Hodgetts et al 2004). Given the conflicting notion of health care workers engaging in distinctly unhealthy behaviour, many researchers have felt compelled to investigate nurses' smoking in various parts of the world (Adriaanse et al 1991), including Asia (Ohida et al 1999a).

Nevertheless, it has been suggested that many previous investigations of nurses' tobacco smoking have suffered from relatively small sample sizes and an unrepresentative selection of staff (Rowe and Clark 2000b). Similarly, despite a high community smoking rate, recent investigations of tobacco usage among Japanese nurses tend to focus on staff working in urban areas (Kitajima et al 2002) or mixed regions (Ohida et al 1999a). Few studies have specifically looked at smoking among rural nurses, particularly those in southern Japan. One project documented smoking rates in a semi-rural area of eastern Japan (Ohida et al 1999b), however, it was published in Japanese. This bias toward urban areas is somewhat unfortunate, as other Japanese investigations have shown higher community smoking rates among certain populations in rural areas (Fukuda et al 2005). Given such inconsistencies, it was considered necessary to investigate the epidemiology of tobacco smoking among a large cross-section of Japanese nurses, working in a rural area of southern Japan.

METHODOLOGY

This study used a self-reporting survey administered to a complete cross-section of nurses from a large, rural hospital. Ethical clearance was provided by an institutional ethics committee in Japan and the study was conducted in accordance with ethical standards relevant to this country. Our questionnaire was adapted from various international tobacco smoking surveys (Hussain et al 1993; Nelson et al 1994; Hay 1998; Ohida et al 1999a). It was initially translated into Japanese by an experienced team of bilingual health professionals, before being translated back into English and checked against the original. The one page document consisted of simple questions on age, gender, total employment duration, current smoking habits and previous smoking history. The number of cigarettes smoked per day, total duration of smoking, and years since quitting smoking were also requested.

Questionnaires were distributed by senior nurses and collected within a one week period, with informed consent implied if questionnaires were voluntarily completed and returned. Data were entered into a spreadsheet program and analysed using statistical software. Basic statistics and prevalence rates were

calculated, with differences by gender evaluated using Pearson's chi square and Fisher's exact test. Data were further stratified by age range and career range during the analysis. Computed 95% Confidence Intervals (95% CI) were calculated for smoking prevalence rates using statistical software. Figures for smoking duration and severity were calculated as percentages of each subgroup, because not all nurses answered each question.

RESULTS

Questionnaires were distributed to a total of 1162 nurses, with 860 completed replies received, giving a high response rate of 74.0%. Their average age was 32.8 years (Standard Deviation: 8.8 years) and average career length 9.1 years (SD 8.7). The overall prevalence of smoking was 10.9% (95% CI: 9.0-13.2), with a further 2.9% (95% CI: 2.0-4.3) being ex-smokers. Five female nurses (5.3% of all smokers) had previously tried to quit smoking and failed, and were thus considered to be current smokers. When stratified by gender, the prevalence of current smoking was 10.8% (95% CI: 8.9-13.1) among female nurses and 18.7% (95% CI: 6.6-43.0) among males (a non statistically-significant difference: P=0.3116).

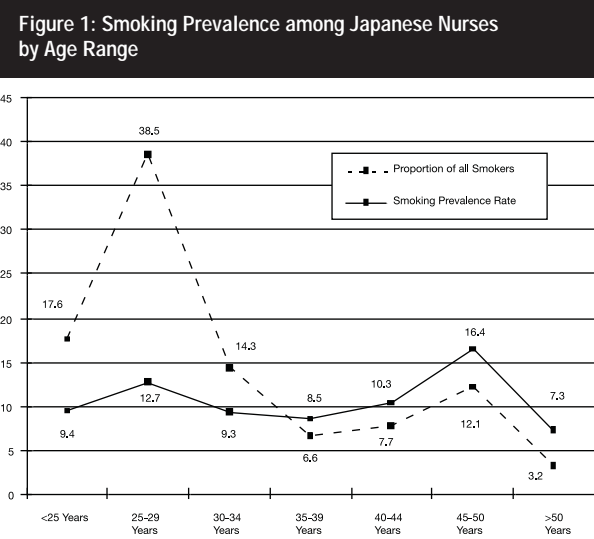
With regard to prior smoking habits, 2.7% (95% CI: 1.8-4.1) of females were ex-smokers, compared with 12.5% (95% CI: 3.5-36.0) of males (P=0.0211). Of those who smoked, the median number was 10.0 cigarettes per day for a period of 10.0 years. Male nurses were significantly more likely to smoke over 10 cigarettes per day, when compared to females (P=0.0071). The majority (63.0%) smoked between 5 and 15 cigarettes per day, for less than 20 years (48.2%) (refer to table 1).

Table 1: Smoking Prevalence, Frequency and Duration among Japanese Nurses				
	%	(95% CI) ^a	n	(%) ^b
All Nurses				
Smoking Rate				
Never Smoked	86.2	(83.7-88.3)	<5 per day	9 (9.8)
Current Smoker	10.9	(9.0-13.2)	5-15 per day	58 (63.0)
Previous Smoker	2.9	(2.0-4.3)	>15 per day	25 (27.2)
Females Only				
Smoking Duration				
Never Smoked	86.5	(84.0-88.6)	<20 years	39 (48.2)
Current Smoker	10.8	(8.9-13.1)	20-30 years	18 (22.2)
Previous Smoker	2.7	(1.8-4.1)	>30 years	24 (29.6)
Males Only				
Median Values				
Never Smoked	68.7	(44.4-85.8)	Smoking Rate	10.0 per day
Current Smoker	18.7	(6.6-43.0)	Smoking Duration	10.0 years
Previous Smoker	12.5	(3.5-36.0)	Quit Smoking	4.5 years ago

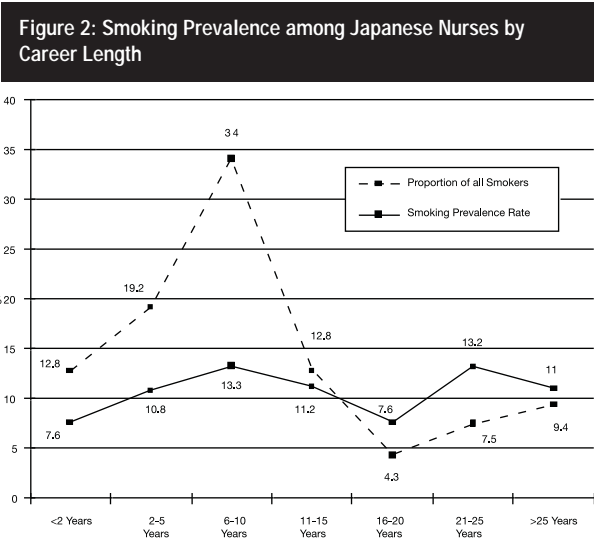
^a Computed 95% Confidence Intervals (95%CI) calculated for smoking prevalence rates;
^b Percentage of nurses who answered each question (n = 92 and 81)

When stratified by age, the highest smoking prevalence (16.4%) was observed among those aged between 45 and 50 years, even though they only accounted for 8% of all

nurses. By proportion, more than one-third of all current smokers (38.5%) were aged between 25 and 29 years (refer to figure 1).



In relation to career length, the highest smoking prevalence (13.3%) was demonstrated among nurses who had worked between 6 and 10 years, and the lowest (7.6%) among those who had worked either less than 2 years, or between 16 and 20 years. Aside from having the highest smoking prevalence, nurses who had worked between 6 and 10 years also comprised the highest proportion of smokers (34.0%) and the largest proportion of all nurses (28.0%) (refer to figure 2).



DISCUSSION

The overall prevalence of smoking among rural Japanese nurses in this study was around 11%, which is lower than most contemporary investigations of this topic, as listed in table 2. As such, the study results tend to suggest that rural nurses in southern Japan smoke at fairly low rates, when compared to their international colleagues.

Table 2: Nurses’ Smoking Prevalence

Country	Rate ^a	Subjects	Location	Author	Year
Spain	53%	1623	Health System	Torres Lana <i>et al</i>	2005
Balkans	51%	209	Medical Clinics	Hodgetts <i>et al</i>	2004
Italy	41%	2453	Hospital Study	Zanetti <i>et al</i>	1998
Denmark	28%	445	Hospital Study	Willaing <i>et al</i>	2003
Ireland	26%	1074	National Survey	McKenna <i>et al</i>	2003
Britain	20%	1069	Hospital Study	Hussain <i>et al</i>	1993
United States	18%	901	National Survey	Nelson <i>et al</i>	1994
New Zealand	18%	30 51	Census Data	Hay	1998
Finland	15%	727	National Survey	Heloma <i>et al</i>	1998
Canada	12%	1269	Postal Survey	Chalmers <i>et al</i>	2000
Japan	11%	860	Hospital Study	Smith <i>et al</i>	b

^a Prevalence rates rounded to the nearest whole number; ^b The current study

In Spain (Torres Lana et al 2005) and Bosnia (Hodgetts et al 2004) for example, over half of all nurses may be current smokers. Other European research from Italy (Zanetti et al 1998) and Denmark (Willaing et al 2003) has also documented higher smoking rates than found in this study. Interestingly, the current smoking rate in this Japanese study (around 11%) was very similar to a previous investigation of Canadian nurses (around 12%) (Chalmers et al 2000). When stratified by gender however, the research suggests that a greater proportion of male Japanese nurses smoke tobacco, when compared to their female counterparts. This is similar to the current trend among Japanese physicians, where males smoke at much higher rates than women (around 7% for women and 27% for men) (Ohida et al 2001). Japanese nurses’ usage of tobacco products also appears to be much lower than the community rate when evaluated as a group (11% among nurses of both genders and 33% in the Japanese community). Male nurses in rural Japan (19%) also appear to smoke at a rate less than half that of males in the wider Japanese community (47%) (WHO 2005). The picture is less encouraging among female nurses however (11%), who appear to use tobacco at a rate similar to the community level for Japanese women (12%). This is contrary to a previous study, where female Japanese nurses smoked at a higher rate (around 19%) than the general population of Japanese women at that time (between 10% and 15%, depending on data sources) (Ohida et al 1999a). Skewed gender distributions in Japanese nursing cohorts (where the majority of subjects are female) when compared to the general population (where only half would be women) however, make it difficult to directly compare smoking rates between these two groups.

Nevertheless, it is interesting to contemplate why smoking rates among Japanese nurses differ from the community in which they live, particularly among men. It is possible that male nurses accept the negative health impacts of smoking more quickly than the

general male population. Alternatively, there may be other workplace factors which make it difficult for them to smoke at high rates. Exactly what these factors may be is difficult to surmise however, as their female counterparts seem to smoke at a level roughly similar to that of the general community.

Stratification by age revealed that over one-third of all smokers were aged between 25 and 29 years, a subgroup which also comprised around one-third of all nurses. Nurses aged 45 to 50 years had the highest smoking prevalence (16.4%), and one which was higher than the community rate for Japanese women. Despite this fact, the downward trend for smoking prevalence by age was inconsistent, even though a large proportion of nurses and smokers were in the younger age range. This result is contrary to a previous study of smoking among New Zealand nurses, where a lower prevalence rate was seen among older nurses (Hay 1998).

The large proportion of young nurse smokers is consistent with recent trends in Japanese society, where an increasing number of young women are smoking. The high proportion of smokers in the 45 to 50 years age range however, is perplexing. It is possible that this age range coincides with a point in their career where nurses begin to experience extra stress from management and administrative issues. It may also be a time when middle-aged nurses are burdened with family stress from teenage children or other domestic issues. If so, they may be more inclined to begin smoking. On the other hand, it is possible that nurses aged older than 50 years are experiencing a (relatively) more stable period in their lives, and may therefore be less inclined to begin smoking, or alternatively, to give up their previous smoking habits.

Male Japanese nurses in the current study also appear to be heavier smokers than the women, with a higher proportion smoking over 10 cigarettes a day. The overall consumption of cigarettes among both genders (10 per day or 3650 per year) is slightly higher than the Japanese national per capita consumption rate (3023 in 2000) (WHO 2005). This suggests that although their overall smoking prevalence rate appears to be lower than the community average, nurses who do smoke, probably consume a greater quantity of tobacco when compared to the general Japanese population.

Why this phenomena occurs and why Japanese nurses smoke at relatively similar rates despite age and career length is difficult to understand, but is nevertheless worth exploring. There has been considerable debate in the international literature as to why nurses smoke (Rowe and Clark 2000a; Rowe and Clark 2000b). Some research suggests that a certain proportion may take up the habit before working as a nurse (Rowe and Clark 2000a), and that the smoking rate among student nurses is particularly high (Rowe and Clark 2000b). In a study of Irish nurses, McKenna et al (2003) suggested that the importance of addiction and enjoyment should not be dismissed. In this

regard, it may also be difficult for Japanese nurses to quit smoking; even if they harbor a strong desire to do so.

In their previous study of Irish nurses, McKenna et al (2001) found that three quarters of current smokers expressed a desire to quit smoking within the next 6 months. In our study however, less than three percent of females were ex-smokers. The ex-smoking rate among males was more encouraging however, with roughly 13% having successfully given up. This benefit was partly negated by the fact that male nurses had a much higher smoking rate overall. It is possible that the unique stressors of nursing practice are a major contributor to smoking in Japan as elsewhere, although the health effects of such behavior would be well appreciated by nurses, and must create some psychological conflict. One possibility is that Japanese nurses may not see themselves as role models for healthy behaviour in the community. A previous study of Japanese physicians found this to be the case (Ohida et al 2001), a finding which may also help explain the relatively high smoking rates among Japanese physicians.

Whatever the reason, it is clear that the current smoking rate among Japanese nurses is unacceptably high. Tobacco consumption has now risen to become a serious public health issue in Japan, with an increasing proportion of the female population smoking tobacco and dying from it (WHO 2005). This in turn, represents an important consideration for nursing professionals, particularly those involved in public health and community nursing. In some sense, Japan has already led the way in certain areas of tobacco epidemiology. The Japanese scientist Takeshi Hirayama (1981) for example, is generally credited with being the first person to establish a clear link between passive smoking and lung cancer (Ong and Glantz 2000).

In recent years, the Japan Nursing Association has also become more active in helping to reduce the proportion of its members who smoke tobacco (Simpson, 2003). Given these achievements, Japanese nurses are in an ideal position to lead public health initiatives to help smokers quit, and also to prevent younger people from smoking. Helping to mobilize Japan's nurses with a focused and sustained anti-smoking campaign may be the key in controlling this current epidemic. Health promotion interventions to help decrease the rate of smoking and increase a nurse's awareness of their important community role may also be beneficial in Japan.

LIMITATIONS OF THE CURRENT STUDY

Although some important data on smoking habits among rural Japanese nurses has been presented, it is still worth considering the relative strengths and weaknesses of this study. Firstly, a large cross-section of over 1000 nurses were surveyed and an excellent response rate of 74% achieved, giving almost complete coverage of the target group. As most Japanese nurses work in large

hospitals such as the one studied, there is confidence that the results are fairly representative of rural nurses in southern Japan. On the other hand, there are always limitations in self-reporting studies, namely the fact that what is reported may differ from what is actually done. Current smokers may be disinclined to participate in smoking research.

Furthermore, there is the methodological issue of the cross-sectional research design, in that it captures only a 'snapshot' of the current situation, rather than describing emerging trends. Despite this fact, self-reporting surveys remain the cornerstone of international smoking research, and as such, there is confidence that this investigation accurately portrays the epidemiology of smoking within the target group. Nevertheless, the general limitations of this design are acknowledged, and it would be prudent to undertake future longitudinal research, preferably that which follows nurses from initial training and throughout their career. The exact risk factors for nurses' smoking in Japan as, elsewhere, would also need to be explored with further investigations of this nature.

CONCLUSION

Overall, this study suggests that around 11% of rural nurses smoke tobacco in southern Japan. When stratified by gender however, the prevalence among male nurses was almost double that of their female counterparts. These results indicate that the distribution of risk is not uniform, and that interventions to help reduce smoking are urgently needed. Any such, programs will only be successful however, if they consider the underlying social and cultural motivations for smoking among Japanese people, generally.

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