

## METHODS

### Study subjects

We selected 6 hospitals from among cancer hospitals and general hospitals in Japan. Three are classified as designated cancer hospitals by the Japanese Ministry of Health, Labour and Welfare, ie, they have more than 399 beds and more than 84% of inpatients are cancer inpatients (National Cancer Center Central Hospital, Tokyo; Aichi Cancer Center Central Hospital, Aichi; Kyusyu Cancer Center Hospital, Fukuoka). The other 3 are general hospitals with more than 649 beds and in which 20% to 35% of inpatients are cancer inpatients (Iwate Prefectural Hospital, Iwate; Nagoya Medical Center Hospital, Aichi; Osaka Medical Center Hospital, Osaka). There were 2782 nurses working at the 6 selected hospitals in April 2008. We excluded nurses who were absent for 1 month or longer (eg, due to pregnancy or illness), and the remaining 2676 nurses were eligible to participate.

### Questionnaire survey

We mailed a self-administered questionnaire to the administrative section for nursing staff in each of the 6 hospitals. The administrative section then delivered the questionnaire with a cover letter and a return envelope to the study subjects and asked that they return it anonymously to the administrative section within 2 weeks. The cover letter explained to the nurses that their participation in this study was completely voluntary. To maintain subject autonomy, we did not send reminder letters. This study was approved by the Institutional Review Board of Nagoya Medical Center.

### Questionnaire items

The questionnaire items comprised subject demographics, perceptions toward tobacco use interventions, and recent 3-year practice in tobacco use interventions. The nurses were asked about their perceptions toward tobacco use interventions for 5 categories of hypothetical cancer patients, which were based on patient physical condition, treatment modality, and/or prognosis: (a) preoperative patients, (b) postoperative patients with early-clinical-stage cancer, (c) postoperative patients who received chemoradiotherapy and have an expected survival period of approximately 3 years, (d) postoperative patients who have clinically advanced cancer but are now free from symptoms and have an expected survival time of 1 year, and (e) patients with a terminal prognosis receiving palliative care. In each of the 5 categories, we established 2 subcategories ( $5 \times 2$ ) according to the type of cancer: tobacco-related cancers (head and neck, esophagus, and lung) and other cancers. For the 10 categories of patients, the nurses' perception of the importance of tobacco intervention was assessed using 5 response categories, ranging from "strongly agree" to "strongly disagree".

The nurses were asked about the frequency of their involvement in tobacco assessment and interventions in

practice using a 4-point scale ranging from "almost always" to "never or rarely". The questionnaire items included were: (a) assessed and documented tobacco use, (b) provided cessation advice, (c) assessed readiness to quit, (d) provided individualized information about the harmful effects of tobacco use, and (e) made arrangements for enrollment in a smoking cessation program.

The questionnaire included the respondent's demographic, professional, and institutional characteristics, and his/her own smoking status. We also asked whether they had received instruction on smoking cessation programs in nursing school.

### Assessment and statistical methods

The summary statistics of perceptions toward tobacco use interventions indicate the proportion of those who indicated that they strongly agreed with a questionnaire item, as we felt that this proportion best reflected the distribution of perception in the 5-part response categories (Figure A1). The summary statistics of tobacco assessment and interventions were calculated using the proportion of those who responded "almost always" to each questionnaire item. The chi-square test was used to compare summary statistics between strata. To elucidate factors associated with perceptions and practices of tobacco use assessment or interventions for cancer patients who smoke, we performed multivariate logistic regression analysis using the following independent variables: age 20 to 29 (yes/no), working in inpatient care (yes/no), working in a surgical division (yes/no), received any academic certification (yes/no), working in a designated cancer hospital (yes/no), and received instruction on smoking cessation programs during nursing school (yes/no). All analyses were performed using STATA version 10 (STATA Corp, College Station, TX, USA).

## RESULTS

The response rates at the 6 hospitals were as follows. Designated cancer hospitals—National Cancer Center Central Hospital (Tokyo), 85% (397/468); Aichi Cancer Center Central Hospital (Aichi), 84% (288/342); Kyusyu Cancer Center (Fukuoka), 89% (233/261). General hospitals—Iwate Prefectural Hospital (Iwate), 76% (392/517); Nagoya Medical Center Hospital (Aichi), 86% (431/499); and Osaka Medical Center Hospital (Osaka), 80% (474/589).

Table 1 shows the characteristics of the 2115 respondents: 41% of respondents worked at a designated cancer hospital, 96% were female, and just over half (51%) were aged 20 to 29 years. Seventy-three percent had received a 3-year nursing degree, 45% had worked for less than 6 years as a nurse, 74% were currently working in an inpatient care setting, and 83% were staff nurses. Only 8% reported current smoking; 12% were former smokers.

The nurses' perceptions toward tobacco use intervention varied widely with regard to the physical condition and

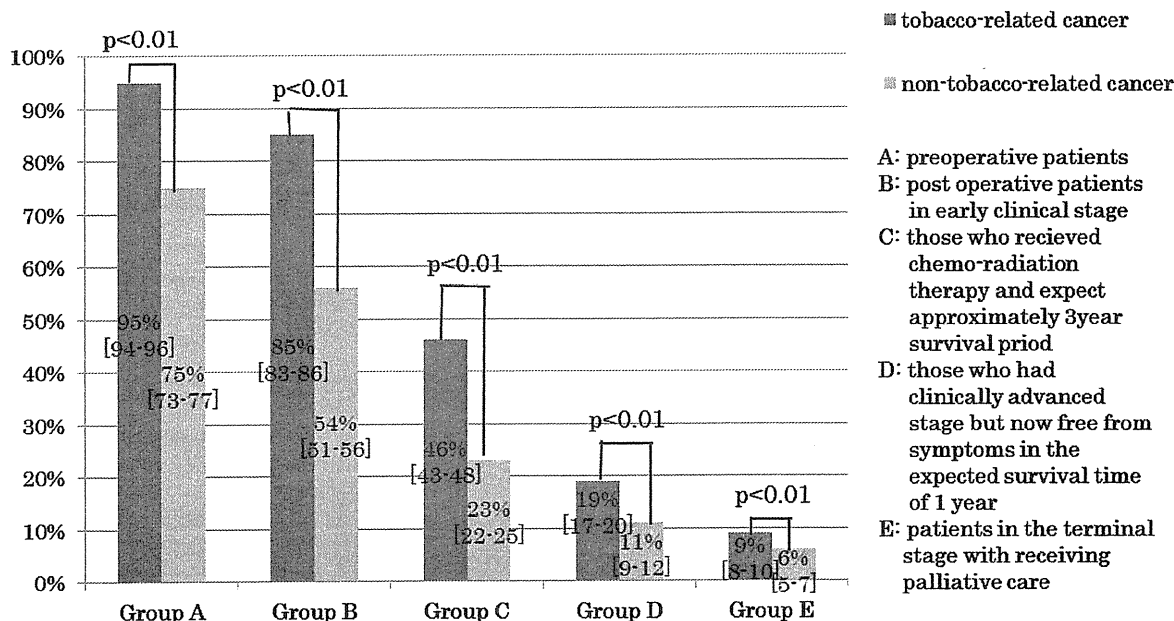
**Table 1. Characteristics of the study subjects (n = 2215)**

Characteristic	n	%
Designated cancer hospital	918	41
General hospital	1297	59
Female	2128	96
Age, years		
20–29	1137	51
30–39	699	32
40+	376	17
Length of nursing education, years		
2	184	8
3	1628	73
4	348	16
Master's degree	15	<1
Length of employment as a nurse, years		
<3	581	26
3–5	418	19
6–9	378	17
10–15	409	18
≥16	426	19
Current work setting		
Inpatient care	1642	74
Outpatient care	204	9
Operating room/intensive care unit	295	13
Other	65	3
Primary position		
Staff nurse	1834	83
Head nurse	229	10
Supervising nurse	93	4
Assistant director/director	10	<1
Certified by Japan Nursing Association	51	2
Certified by other academic society	30	1
Smoking status		
Current smoker	170	8
Ex-smoker	275	12
Never smoker	1731	78

prognosis of the cancer patients (Figure 1). Most nurses strongly agreed that tobacco use intervention should be provided to currently smoking cancer patients who were in a preoperative stage or had early-clinical-stage cancer. In contrast, they felt less need to provide intervention to incurable cancer patients who smoke. The subjects felt that the need for tobacco use intervention was significantly higher in patients with tobacco-related cancers than in those with non-tobacco-related cancers in all 5 categories ( $P < 0.01$ ).

The proportions of responses in each of the 5 categories of tobacco intervention perception are shown in Supplemental Figure A1. The proportion of nurses who strongly agreed or agreed with the need for tobacco use intervention declined with deteriorating patient health. In multivariate analysis, the nurses working in designated cancer hospitals had a significantly more positive perception of tobacco intervention for preoperative cancer patients than did nurses working in general hospitals (odds ratio [OR] 2.67, 95% confidence interval [CI] 1.60–4.45 for patients with tobacco-related cancers; OR 1.79, 95% CI 1.43–2.25 for patients with non-tobacco-related cancers). In contrast, nurses working in designated cancer hospitals had a significantly more negative perception of tobacco intervention for patients with a terminal prognosis receiving palliative care (OR 0.66, 95% CI 0.51–0.84 for patients with tobacco-related cancers; OR 0.57, 95% CI 0.40–0.81 for patients with non-tobacco-related cancers).

The frequency of involvement in tobacco assessment and intervention varied widely, as shown in Figure 2: 62% of nurses responded that they “almost always” assessed and documented tobacco use, whereas only 10% indicated that they “almost always” assessed readiness to quit in cancer



**Figure 1.** Proportion of study subjects who strongly agreed with providing tobacco intervention to cancer patients in various states of health (A–E).

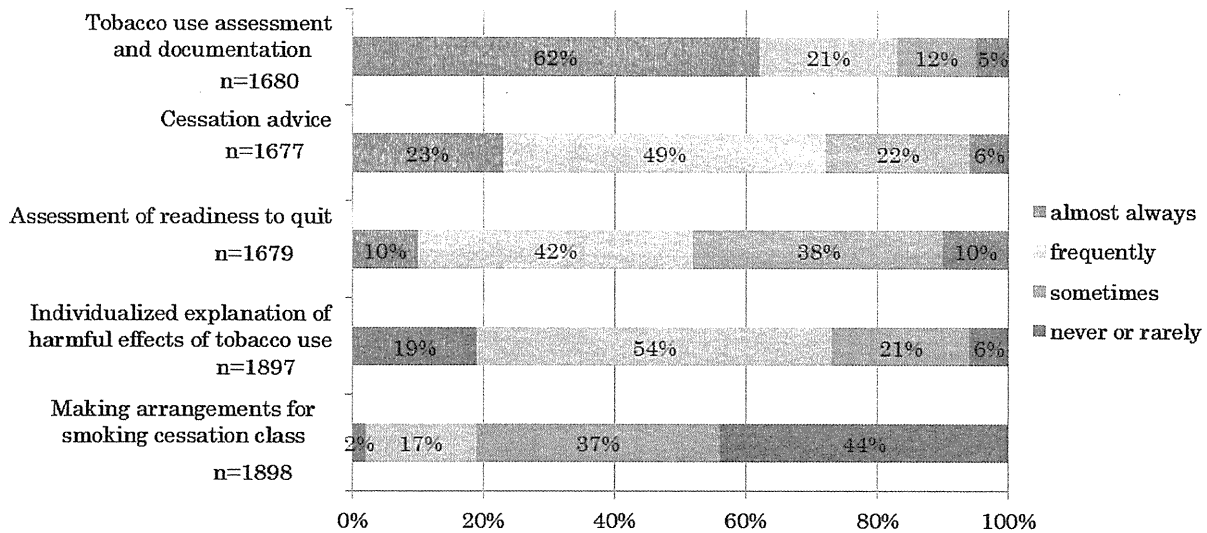


Figure 2. Frequency of performing tobacco use assessment and intervention during a recent 3-year period for currently smoking patients with cancer.

patients. Cessation advice to cancer patients who smoke was “almost always” or “frequently” provided by 72% of the respondents, whereas only 19% of them made arrangements for enrolling patients in a smoking cessation program (Figure 2).

The frequency of tobacco use assessment and documentation significantly differed according to respondent age, length of nursing education, current work setting (inpatient care/other), nursing certification status, and type of hospital (cancer hospital/general hospital) (Table 2). Current work setting (surgical division/other), type of hospital, and history of receiving instruction on smoking cessation programs in nursing school were significantly associated with the frequency of providing cessation advice. Assessment of readiness to quit and providing individualized explanation of the harmful effects of tobacco use were significantly associated with the nurses’ current work setting, certification status, type of hospital, and history of receiving instruction in smoking cessation programs. There was no significant difference in the frequency of tobacco assessment or intervention with regard to respondent smoking status (Table 2).

In multivariate analysis, the current work setting of inpatient care was significantly associated with performing tobacco use assessments and documentation (OR 1.57, 95% CI 1.14–2.16; Table 3). Current work in a surgical setting was significantly associated with providing cessation advice (OR 1.83, 95% CI 1.40–2.39) and providing individualized explanation of the harmful effects of tobacco use (OR 1.58, 95% CI 1.21–2.05). Nurses with an academic certification were significantly more likely to assess readiness to quit than those without such certification (OR 2.33, 95% CI 1.29–4.21). All 4 tobacco intervention practices were significantly more frequent among nurses working in a designated cancer hospital than among those in general hospitals. Nurses

who received instruction on smoking cessation programs in their nursing school were significantly more likely to provide cessation advice (OR 1.61, 95% CI 1.15–2.26), assessment of readiness to quit (OR 1.73, 95% CI 1.09–2.75), and individualized explanation of the harmful effects of tobacco use (OR 1.94, 95% CI 1.39–2.69).

## DISCUSSION

To our knowledge, there have been no Asian studies of nurses’ perceptions of tobacco intervention for cancer patients who smoke, although the attitudes of people with cancer regarding smoking cessation and the patient education practices of oncology nurses in Japan, Taiwan, and Korea were reported in a small study.<sup>14</sup> Our study showed that nurses’ perceptions toward tobacco intervention were highly dependent on the health and prognosis of cancer patients and whether their cancer was tobacco-related. The Japanese nurses showed less willingness to provide tobacco intervention for cancer patients with a poor prognosis. In particular, the nurses working in designated cancer hospitals had a significantly more negative perception of tobacco intervention for patients with a terminal prognosis who were receiving palliative care, possibly because they believed that these patients would derive limited benefit from smoking cessation. However, we believe that this attitude is not appropriate because continued smoking reduces treatment effectiveness and results in faster deterioration of health, even in patients with incurable cancer. The present study also showed that the Japanese nurses were less willing to provide tobacco intervention for patients with non-tobacco-related cancers than for those with tobacco-related cancers. This was probably due to the nurses’ incorrect belief that currently smoking patients with non-tobacco-related cancers do not believe that smoking cessation would

**Table 2. Proportions of nurses who, during their most recent 3 years of practice, almost always performed tobacco use assessments or interventions for currently smoking cancer patients, by characteristics of nurses**

Nurse characteristic	Tobacco use assessment and documentation				Cessation advice			Assessment of readiness to quit			Individualized explanation of harmful effects of tobacco use		
	<i>n</i>	%	95% CI	<i>P</i> value	%	95% CI	<i>P</i> value	%	95% CI	<i>P</i> value	%	95% CI	<i>P</i> value
Age 20–29													
Yes	1137	65	61.4–67.8	<b>0.01</b>	24	20.8–26.4	0.69	9	7.0–10.7	0.14	19	16.1–20.9	0.19
No	1075	59	55.1–62.0		23	19.9–25.7		11	8.8–13.1		26	18.2–23.5	
Length of nursing education													
≥4 years	363	70	64.6–75.5	<b>&lt;0.01</b>	24	19.3–29.5	0.61	10	7.5–15.0	0.37	20	15.8–24.9	0.71
<4 years	1845	60	57.5–62.6		23	20.7–25.2		11	8.0–11.0		19	17.5–21.4	
Current work setting													
Inpatient care	1642	64	61.1–66.3	<b>&lt;0.01</b>	24	21.8–26.5	0.12	9	7.9–11.1	0.28	20	17.7–21.7	0.99
Other	564	55	49.8–60.2		20	16.0–24.5		11	8.1–14.7		20	15.8–23.6	
Current work setting													
Surgical division	883	63	58.9–67.7	0.5	28	24.9–33.2	<b>&lt;0.01</b>	11	7.2–12.6	0.48	24	20.3–27.6	<b>&lt;0.01</b>
Other	1335	61	57.9–63.8		21	18.5–23.4		10	7.9–11.5		18	15.4–19.8	
Any academic certification													
Yes	126	52	41.3–61.8	<b>0.04</b>	31	21.1–40.0	0.08	20	11.8–28.2	<b>&lt;0.01</b>	29	20.0–37.4	<b>0.01</b>
No	2074	62	60.0–64.8		23	20.7–24.9		9	8.9–10.8		19	17.1–20.8	
Workplace													
Designated cancer hospital	918	73	69.9–76.4	<b>&lt;0.01</b>	35	31.7–38.8	<b>&lt;0.01</b>	15	12.3–17.6	<b>&lt;0.01</b>	28	24.8–31.1	<b>&lt;0.01</b>
General hospital	1297	53	50.1–56.4		14	12.1–16.6		6	4.6–7.6		14	11.7–15.7	
Received instruction <sup>a</sup>													
Yes	346	68	62.0–73.8	0.05	31	25.7–37.4	<b>&lt;0.01</b>	13	9.6–18.3	<b>0.04</b>	27	22.2–32.6	<b>&lt;0.01</b>
No	1838	61	58.6–63.6		22	19.7–23.9		9	7.6–10.6		18	16.2–19.9	
Attended lecture <sup>b</sup>													
Yes	210	69	61.3–76.6	0.05	23	16.0–29.9	0.92	14	8.1–19.6	0.12	25	18.8–32.1	0.06
No	1965	61	59.0–63.9		23	21.3–25.6		10	8.1–11.1		19	17.0–20.7	
Smoking status													
Never	1731	62	59.3–64.6	0.62	23	20.8–25.3	0.6	10	8.2–11.5	0.65	19	17.3–21.3	0.58
Current or ex-smoker	445	61	55.4–65.7		24	19.6–28.6		9	6.1–12.2		20	16.3–24.3	

<sup>a</sup>Received instruction on smoking cessation programs at his/her nursing school.

<sup>b</sup>Attended a lecture on smoking cessation intervention at his/her hospital.

95% CI: 95% confidence interval.

**Table 3. Factors associated with almost always performing tobacco use assessment and interventions for currently smoking cancer patients during the most recent 3 years of practice in Japanese nurses (multivariate logistic regression)**

	Tobacco use assessment and documentation			Cessation advice			Assessment of readiness to quit			Individualized explanation of harmful effects of tobacco use		
	OR	(95% CI)	<i>P</i> value	OR	(95% CI)	<i>P</i> value	OR	(95% CI)	<i>P</i> value	OR	(95% CI)	<i>P</i> value
Age 20–29 years	1.13	(0.89–1.42)	0.31	0.98	(0.75–1.29)	0.9	0.71	(0.48–1.04)	0.08	0.78	(0.60–1.03)	0.08
Inpatient care	1.57	(1.14–2.16)	0.006	1.41	(0.94–2.11)	0.1	0.93	(0.56–1.54)	0.78	1.02	(0.70–1.50)	0.9
Surgical division	1.21	(0.96–1.53)	0.11	1.83	(1.40–2.39)	0.000	1.02	(0.70–1.51)	0.89	1.58	(1.21–2.05)	0.001
Any academic certification	0.69	(0.43–1.11)	0.13	1.57	(0.92–2.67)	0.1	2.33	(1.29–4.21)	0.005	1.63	(0.99–2.69)	0.06
Designated cancer hospital	2.36	(1.88–2.95)	0.000	3.49	(2.70–4.51)	0.000	2.71	(1.89–3.88)	0.000	2.58	(2.00–3.32)	0.000
Received instruction <sup>a</sup>	1.18	(0.86–1.62)	0.3	1.61	(1.15–2.26)	0.006	1.73	(1.09–2.75)	0.02	1.94	(1.39–2.69)	0.000

<sup>a</sup>Received instruction on smoking cessation programs at his/her nursing school.

OR: odds ratio, 95% CI: 95% confidence interval.

improve their health and/or they are less motivated than those with tobacco-related cancers to stop smoking. Therefore, we believe that modifying nursing education might change the incorrect attitudes of nurses toward tobacco intervention for cancer patients in Japan.

Regarding tobacco intervention practice, although most nurses assessed and documented the tobacco status of their patients, they did not often provide cessation advice, assess readiness to quit, provide individualized information about the harmful effects of tobacco use, or make

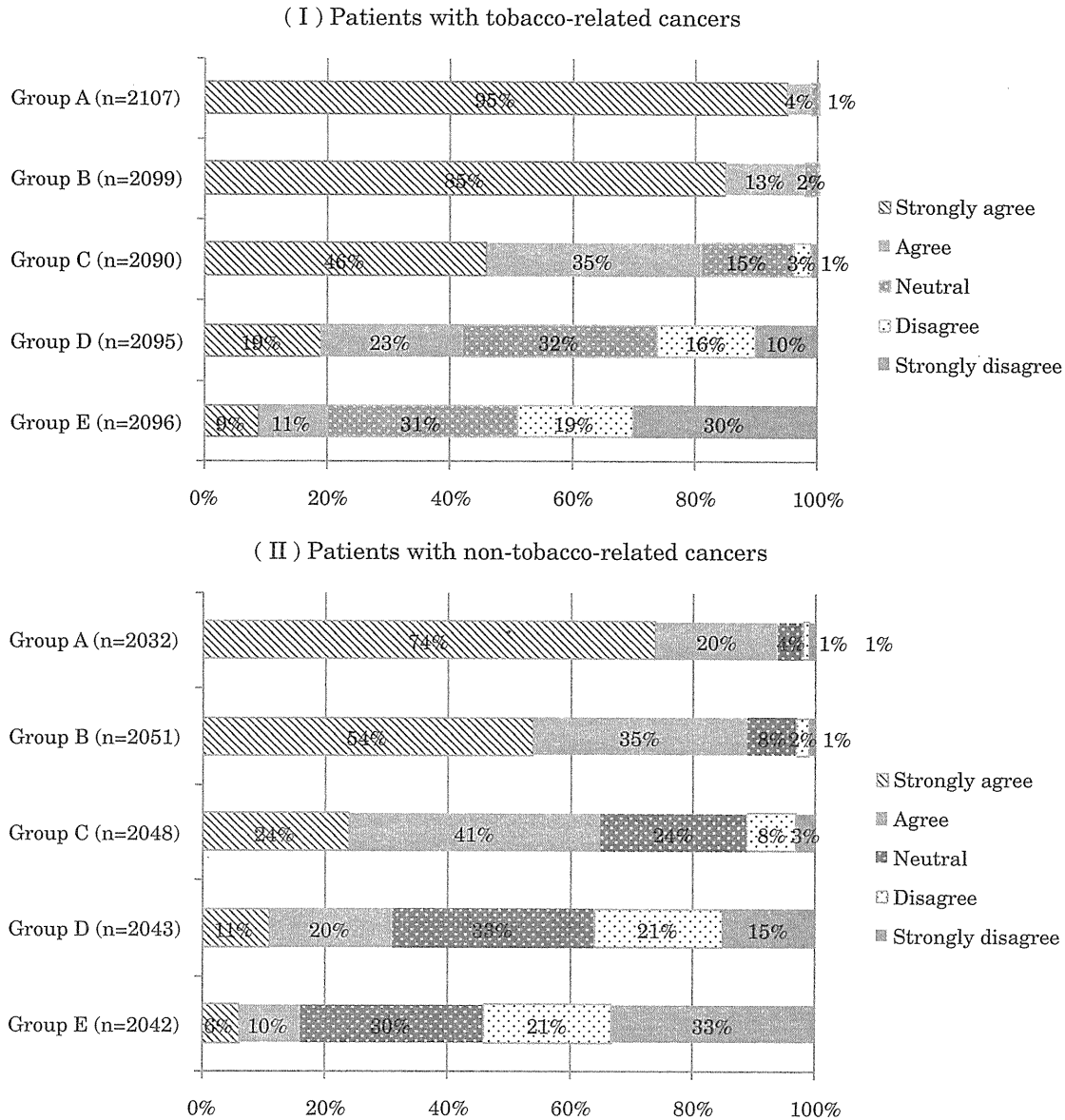


Figure A1. Responses of nurses regarding the need for tobacco intervention in cancer patients, by cancer type and state of health. Group A: Preoperative patients. Group B: Postoperative patients with early-clinical-stage cancer. Group C: Patients who received chemoradiotherapy and have an expected survival time of approximately 3 years. Group D: Postoperative patients who have clinically advanced cancer but are now free from symptoms and have an expected survival time of 1 year. Group E: Patients with a terminal prognosis receiving palliative care.

arrangements for patients to enroll in a smoking cessation program. Except for assessing and documenting tobacco status, the frequencies of these practices in the present study were lower than those among oncology nurses in the United States assessed in 1998, as indicated by the proportions of nurses reporting a frequency of “every day” or “every week” (provided cessation advice: 23% vs 32%; assessed readiness to quit: 10% vs 38%). However, it should be noted that the response rate in the US survey was only 38%.<sup>15</sup> The low frequency of making arrangements for cancer patients to enroll in a smoking cessation program in the

present study was possibly influenced by the considerable number of patients with limited readiness to quit and low activities of daily living, as well as the limited availability of smoking cessation programs in patients’ areas of residence.

From the perspective of nurses’ behavior regarding tobacco intervention for cancer patients who smoke, an important finding was that these behaviors were positively associated with a history of instruction in smoking cessation programs during nursing school, after adjustment for a number of confounding factors. This finding confirmed the importance

of providing instruction on smoking cessation in the standard curriculum of nursing schools in Japan.

One limitation of our study was the representativeness of the sample we obtained. We selected nurses working at 3 designated cancer hospitals and 3 general hospitals. Although their baseline characteristics were well documented, the findings may not be applicable to nurses working in smaller hospitals, as their characteristics might differ from those of our respondents. Our multivariate analysis showed that nurses working in the designated cancer hospitals and those with any academic certification in nursing education or technique were more likely to provide smoking cessation interventions for cancer patients, which suggests that the frequency of smoking cessation intervention by nurses in the present study might be higher than that among Japanese nurses in general. To improve representativeness, we need to perform another survey of nurses stratified by specialty and hospital size. Our study did not assess the tobacco intervention perception and practices of nurses with regard to patients' readiness to quit and other behavior-related characteristics such as self-efficacy in quitting. To improve the usefulness of the assessment, we need to examine these items on patient smoking-related characteristics in a future study.

In conclusion, we observed that the perceptions of Japanese nurses toward tobacco intervention in cancer patients differed greatly with regard to patient treatment status and prognosis. In addition, the nurses' tobacco intervention practices were significantly associated with a history of instruction in smoking cessation programs while they were in nursing school. These findings should be useful in improving tobacco intervention attitudes and practices among nurses treating patients with cancer in Japan.

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Conflicts of interest: None declared.

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保険を使った禁煙治療によって生み出される禁煙成功者に要した医療コスト.

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#### 7-5 保険を使った禁煙治療によって生み出される禁煙成功者に要した医療コスト

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【目的】 保険を使った禁煙治療における費用効果比（一人の禁煙に要する費用）を算出し、効果的で効率的な禁煙プログラムのあり方を考えることを目的としている。

【方法】 禁煙治療に要した費用は、6つの医療機関（東京1、愛知3、大阪1、愛媛1）の禁煙外来を、2008年4月～2010年7月に受診した患者525名を対象として求めた。費用の内訳は医師・看護師の診療時間に相当する人件費、診療費などを含めた医療機関でのコスト、調剤料・薬剤料を含めた保険薬局でのコスト、の総額とした。この治療によって禁煙成功者一人を生み出すのに要した費用は、一人あたりの平均費用と、禁煙成功率（後述）の逆数との積で求めた。

【結果】 費用計算用の対象者全員の費用の合計は、31,286,538円（人件費6,179,852円＋医療機関でのその他のコスト8,335,520円＋保険薬局でのコスト16,771,166円）で、一人あたりにかかった禁煙治療のコストは59,593円（31,286,538円/525人）であった。禁煙成功率（初回に受診した者を分母とし、ドロップアウト、6か月後調査の未返信者を失敗とし、4回以上外来受診した者で、かつ治療終了後6か月後の郵送調査で禁煙できたと返信した者を成功とした率）は、23%（89人/388人）であった。禁煙成功者一人を生み出すのに要した費用は、259,799円 $\{59,593円 \times (1/0.23)\}$ であった。

【結論】 本調査では、禁煙成功者一人にかかる医療コストは、約26万円であった。先行研究では、企業内での簡易な禁煙介入における禁煙成功者1人に対し、約7万円の費用を要していた。薬剤の使用や医療職のコストなどから、禁煙治療での医療コストは、これより高額となりそうであるが、禁煙成功により生み出されるその後の医療コストの減少から考えれば、十分価値あるものと考えられる。

2) 谷原真一, 今任拓也, 百瀬義人.

喫煙習慣別に検討した男性勤労者における年間医療費の推移.  
第 84 回日本産業衛生学会, 東京, 2011 年.

### 5-1-03

#### 喫煙習慣別に検討した男性勤労者における年間医療費の推移

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【目的】勤労者を対象として喫煙が医療費に与える影響を検証した場合、断面調査では喫煙者の医療費が禁煙者もしくは非喫煙者よりも低額であることがしばしば認められる。特に禁煙者については、何らかの疾病罹患もしくは自覚症状によって禁煙に至る場合、既に医療費が増加していることが考えられる。また、喫煙者は禁煙者より健康に対する意識が高いとはいえず、同一の健康状態でも医療機関受診の頻度が低くなる可能性がある。本研究は追跡調査によって喫煙習慣別の年間医療費の推移を検討することを目的とする。

【方法】2002年度にF県全域に事業所を展開する健康保険組合が実施した健康診断の受診者でT地区に勤務する被保険者本人であった男性2,155名について、2002年4月1日から2008年3月31日までの診療報酬明細書(レセプト)情報を連結し、健康診断時に把握した喫煙習慣と年度毎の医療費総額の関連を検討した。連結に当たっては、健康保険組合より資格情報の提供を受け、被保険者本人ではなくなった者は以後の年度より年間医療費の比較から除外していった。医療費は医科、歯科、調剤レセプトの合計とした。本研究は福岡大学医に関する倫理委員会に申請し、研究実施の承認を得た。

【結果】2002年度の健康診断受診時点において、喫煙者1,370人、非喫煙者541人、禁煙者238人、喫煙習慣の無回答者6人であった。2002年4月1日時点での満年齢は全体では39.7歳、喫煙者38.8歳、非喫煙者39.8歳、禁煙者44.6歳、喫煙習慣の無回答者48.7歳であった。2008年3月31日現在での在籍状況は、全体1,519人(70.5%)、喫煙者972人(70.9%)、非喫煙者379人(70.1%)、禁煙者164人(68.9%)、無回答者4人(66.7%)であり、喫煙習慣による差は認められなかった。2002年度の1人あたり医療費の平均値は喫煙者96,503円、非喫煙者130,211円、禁煙者194,183円であり、追跡開始時点では禁煙者は喫煙者及び非喫煙者より医療費が高額であった。喫煙者は非喫煙者より追跡開始当初は医療費が低額であったが追跡開始4年目の2005年度以降はほぼ同額となった。2007年度の1人あたり医療費の平均値は喫煙者110,947円、非喫煙者117,698円、禁煙者226,077円であり、喫煙者と禁煙者は年間医療費が増大傾向、非喫煙者では年間医療費が減少傾向であり、追跡開始時点の喫煙習慣によって年間医療費の推移が異なっていた。

【考案】禁煙者は喫煙者及び非喫煙者より医療費が高額であったことは、平均年齢が高いことから、既に何らかの疾患による受診歴を有する者が高いためと考えられる。断面調査および短期間の追跡では喫煙者の方が非喫煙者よりも医療費が低額であることには、追跡開始時点の健康状態や受診行動による影響が存在する。喫煙習慣以外に医療費に関連する要因の検討や、より長期間の追跡は今後の課題である。

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- 3) 中村幸志, 櫻井 勝, 三浦克之, 森河裕子, 長澤晋哉, 石崎昌夫, 城戸照彦, 成瀬優知, 中川秀昭.

職域での個別禁煙支援の長期禁煙継続率およびその関連要因.

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## P1-015

### 職域での個別禁煙支援から長期間経った後の禁煙継続率、再喫煙率及びその関連要因

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キーワード: 禁煙、個別支援

【背景】喫煙は我が国の重要な健康問題である。2006年に条件を満たした医療機関での禁煙治療の保険診療が認可され、このような個別禁煙支援への認知及び期待が高まった。職域においても、その利点を活かしながら同様な個別禁煙支援を行っているところは少なくない。しかし、支援から長期間経った後の禁煙継続率及び再喫煙率についての報告は少ない。【目的】職域で個別禁煙支援を行い、長期間経った後の禁煙継続率、再喫煙率及びその関連要因を検討することを目的とした。【方法】富山県内の某製造業事業所(従業員約7,300名)において医療機関での禁煙外来に準拠した個別禁煙支援を実施した(随時利用可能)。初回は産業医及び保健師がカウンセリングを行った。以後は面談の代わりにイントラネットメールや社内便を用いて毎週1回禁煙日誌の提出を求め、それに対して保健師が助言を返送した。希望者にはニコチンパッチ(パッチ)の処方も行なった(自己負担額は3割)。6ヶ月間の禁煙継続者を暫定禁煙成功者として、以後は禁煙日誌のやり取りを中止した。禁煙開始から6ヶ月後と2年後の禁煙継続率及び6ヶ月後から2年後にかけての再喫煙率を計算した。さらに、2年後の禁煙継続状況と性、年齢(三分位)、ファーマストローム・ニコチン依存度テスト(FTND)点数(三分位)及びパッチ使用状況との関連をカイニ乗検定で検討した。【結果】2006-08年度に本個別禁煙支援を希望した者は154名(男149名)で、年齢及びFTND点数の平均値±標準偏差は44.2±11.2歳及び4.6±2.5点であった。93名に対してパッチの処方を行った。6ヵ月後及び2年後の禁煙継続率はそれぞれ57.1%(88名)、48.7%(75名)であった。6ヶ月間禁煙を継続できても、そのうちの約15%は喫煙を再開した(13/88名)。2年後の禁煙継続状況は性(男49.0%、女40.0%)、年齢(21-39歳45.1%、40-50歳56.5%、51-61歳45.6%)及びFTND点数(0-3点62.0%、4-5点44.4%、6-10点42.9%)で有意な違いはなかったが、パッチ使用者では有意に低かった(不使用63.9%、使用38.7%;  $p < 0.01$ )。【考察】パッチ使用者での低禁煙継続率については、禁煙者がパッチを欲する要因や医師がパッチを必要と判断する要因が低禁煙継続率と繋がるか否かを検討する必要がある。【結論】禁煙支援の有効性については長期追跡にて評価する必要がある。

- 4) 村上義孝, 三浦克之, 岡村智教, 上島弘嗣.  
滋賀全市町を対象とした健診・医療費突合データによる喫煙と医療費との関連.  
第70回日本公衆衛生学会総会, 秋田, 2011年.

#### 0403-30 滋賀全市町を対象とした健診・医療費突合データによる喫煙と医療費との関連

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【目的】喫煙がわが国の医療費に与える影響は十分に解明されておらず、その実態に関する定量的な情報が求められている。今回われわれは滋賀県全26市町と滋賀県国保連合会の協力を得て作成した、平均5年間の医療費を前向きに追跡した健診・医療費突合データから、喫煙状況と医療費との関連を性・年齢別に詳細に記述したので報告する。

【方法】滋賀県26市町を対象に平成12-17年度の6年間の国保医療費データ（外来・入院・保険調剤費を含めた医療費総額の年間平均）の収集を行った。あわせて当該期間の最も古い年の健診データを医療費データに突合し約6万人の前向きデータベースを作成した。解析対象者は同データベースで喫煙情報を有する市町・対象者であり、18市町、39,156人(男性:14,396人、女性:24,760人)であった。すべての解析は男女別に実施し、性・年齢階級別に喫煙状況と年間医療費との関連を検討した。喫煙状況は非喫煙、禁煙、現在喫煙(1-19本)、現在喫煙(20本以上)の4カテゴリに分類、年齢階級は40-49歳、50-59歳、60-69歳、70歳以上の4カテゴリとした。

【結果と考察】喫煙状況別の平均総医療費の比較であるが、男性ではそれほど顕著な傾向が見られなかったものの、女性においては40歳代（総医療費の平均；非喫煙：107,804円、禁煙：101,965円、現在喫煙1-19本：112,039円、現在喫煙20本以上：170,376円）および50歳代（非喫煙：137,697円、禁煙：220,671円、現在喫煙1-19本：191,341円、現在喫煙20本以上：204,735円）で喫煙のグレード上昇にともなう平均医療費の増加が観察された。喫煙と医療費との関連に多大な影響を及ぼす年齢の交絡を層別解析で除外したことで、性・年齢階級別の傾向の違いが表出したと思われる【結論】喫煙の医療費に与える影響が年齢階級によって異なり、特に女性40歳代、50歳代での喫煙グレード上昇にともなう医療費増加に注視する必要があると思われた。

5) Murakami Y, Okamura T, Miura K, Ueshima H.

Relationship between the number of established cardiovascular risk factors and annual medical costs in Japan: cost analysis in 38 890 Japanese individuals. The 19<sup>th</sup> IEA World Congress of Epidemiology, Edinburgh, Scotland, 2011.

**P1-257 RELATIONSHIP BETWEEN THE NUMBER OF ESTABLISHED CARDIOVASCULAR RISK FACTORS AND ANNUAL MEDICAL COSTS IN JAPAN: COST ANALYSIS IN 38 890 JAPANESE INDIVIDUALS**

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**Background** Information about the relationship between the number of established cardiovascular disease risk factors and medical costs is limited.

**Methods** A linked analysis of the medical costs and health examination measures was performed in Shiga, Japan. Medical costs information for the period April 2000–May 2006 was collected from the Shiga National Health Insurance Organization database. Corresponding data for 38 890 individuals (age,  $\geq 40$  years) generated during annual health examination conducted between 2000 and 2003 were collected from the local municipalities in the Shiga prefecture. These data were merged by name, sex, and dates of birth. Median and interquartile were used to compare the annual medical costs among groups with different number of risk factors. The risk factors were hypertension (SBP  $\geq 140$  or DBP  $\geq 90$ ), high cholesterol (total cholesterol  $\geq 240$ ) and blood glucose levels (casual blood glucose  $\geq 126$ ), and smoking.

**Results** The median total annual medical cost in the group with no risk factors was 217 149 Yen for men and 147 880 Yen for women. The median total annual medical cost in the group with four risk factors was 1.28 times higher in men (278 651 Yen) and 1.80 times higher in women (265.788 Yen), as compared to that in the group with no risk factors. These trends were most apparent in outpatients (men: 1.47 times (127 205 Yen vs 186 811 Yen); women: 2.23 times (94 648 Yen vs 211 123 Yen)).

**Conclusion** Annual medical costs increase with an increase in the number of cardiovascular disease risk factors in the Japanese population.

# 喫煙、医療費1733億円押し上げ

脳梗塞や心筋梗塞などの医療費が、喫煙によって1733億円増加しているという推計を、厚生労働省研究班(主任研究者＝辻一郎東北大学教授)がまとめた。メタボリックシンドローム(内臓脂肪症候群)による増加分の1.5倍に上り、研究班は禁煙指導の強化を訴えている。

研究班は、国立循環器病研究センター(大阪府吹田市)

## 脳・心臓疾患

が1989～2007年に行った吹田市民4285人(40～74歳)の健康調査の結果を分析。様々な病気の発症率と、喫煙の有無との関連を調べた。

その結果、脳梗塞や脳出血などの「脳血管障害」は、喫煙によって男性は25%、女性は5%増加。また、心筋梗塞や狭心症などの「虚血性心疾患」は、同じく男性は12%、

## メタボの1.5倍

女性は19%増えていた。この増加率から、全国の同じ年齢層の脳血管障害と虚血性心疾患の医療費総額1兆781億円(08年度)のうち、1733億円は喫煙によって余計にかかった分と算出された。

メタボによる医療費の増加分を同様に計算すると計158億円だった。研究班の岡村智教(たけのこ)・慶応大学教授(公衆衛生学)は「メタボ対策の保健指導だけでなく、喫煙対策にも力を入れるべきだ」と話している。

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各種禁煙対策の経済影響に関する研究－医療費分析と費用効果分析－

(H22－循環器等(生習)－一般－012)

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