

Beliefs regarding smoking in the workplace: results from the Global Workplace Smoking Survey

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Abstract

Objectives To collect global information on attitudes of employers and employees toward workplace smoking and cessation.

Methods The Global Workplace Smoking Survey collected data from employers (smoking and non-smoking) and smoking employees in 14 countries in 2007.

Results A total of 3,525 employees (all smokers) and 1,403 employers (smokers and non-smokers) participated in the survey. While the majority of employees and employers felt that workplace smoking was unacceptable, this was indicated by a greater proportion of employers than employees, particularly in Europe and Asia (92 and 93% of employers vs. 61 and 71% of employees, respectively). Only 29% of employees believed that smoking has negative financial impacts on their company compared to 46% of employers. While almost three-quarters of employees agreed that all workplaces should be smoke-free, agreement was greater among employers (87%).

Conclusions Our results indicate a broad lack of support for workplace smoking among employers and smoking employees, although employers were more likely to stress negative financial consequences and advantages of smoke-free workplaces. These results suggest directions for subsequent programs to reduce workplace smoking by assisting smoking cessation.

Keywords Smoking · Workplace · Employer · Employee · Questionnaire · Attitude to health

Introduction

According to the World Health Organization (WHO), almost one billion men and approximately 250 million women worldwide smoke some form of tobacco (Mackay et al. 2006). The health burden association with smoking is well known, but the economic burden is less well understood. In particular, recent studies have suggested that smoking is associated with substantial workplace costs. Smoking can increase employee absenteeism, decrease workplace productivity, lead to higher health-care costs, and cause more early retirement due to ill health (Griffiths and Grieves 2002). A 1995 Canadian study estimated the workplace cost of smoking as \$3,022 (in 2002 US\$) per smoker per year (Canadian Conference Board 1997). Bolin and Lindgren (2007) estimated a total cost of smoking in Sweden in 2001 of \$804 million. Healthcare costs accounted for only 26% of this total, with the majority due to workplace-related costs. Similarly, a 1997 retrospective cohort study found that the current smoking costs of the US Air Force was approximately \$107.2 million per year, with \$20 million from medical-care expenditures and \$87 million from lost workdays (Centers for Disease Control and Prevention (CDC) (2000).

There is tremendous worldwide variation in workplace exposure to smoking. For example, while a 2004 study indicated that more than 75% of smokers in Taiwan smoked in the workplace (Wen et al. 2004), the workplace smoking rate in Taiwan in 2008 was reported as 20% (Chao et al. 2009). Following initiation of a 2006 law partially restricting workplace smoking in Spain, workplace exposure

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decreased from 25.8 to 11% (Jiménez-Ruiz et al. 2008). However, there was no significant change in exposure to smoking in Spanish workplace venues that continued to permit smoking (e.g., discotheques and pubs) (Nebot et al. 2009). A number of activities targeting workplace smoking have been implemented in efforts to improve public health (including the health of non-smokers exposed to second-hand smoke) and decrease workplace costs associated with smoking. These range from information campaigns and assistance with smoking cessation to legislation requiring smoke-free workplaces. As of 2008, comprehensive laws restricting workplace smoking had been passed in Bermuda, Estonia, France, Iceland, Ireland, Italy, Lithuania, Malta, New Zealand, Norway, Singapore, Slovenia, South Africa, Sweden, Thailand, UK and Uruguay (Global Smokefree Partnership 2008). Even in areas without specific legislation, there can be a substantial presence of smoke-free workplaces. For example, in Tijuana (Mexico), approximately 44% of adults had non-smoking policies in their workplaces (Martínez-Donate et al. 2005).

To evaluate attitudes of corporate employees who smoke, as well as corporate employers (both smokers and non-smokers), regarding workplace smoking and smoking cessation activities as well as current support for such activities, Pfizer sponsored an international survey, the Global Workplace Smoking Survey, in a range of countries. This study describes the survey respondents and presents responses by employers and smoking employees to questions on beliefs regarding workplace smoking.

Methods

The global workplace smoking survey was conducted in 14 countries: South Korea, Japan, China, Taiwan and India (collectively comprising Asia); UK, Italy, Sweden, France, Germany, Spain, Poland and Turkey (Europe); and Brazil (South America). These countries were selected based on having high prevalences of smoking as well as changing tobacco control policy environments. In addition, there was an intent to include the countries involved in two prior international surveys focused on attitudes toward smoking: the STOP survey (Pipe et al. 2009) and the SUPPORT survey (Reid et al. 2009). All surveys were conducted between 1 July and 18 September 2007. In all countries except India, surveys were conducted by Web-assisted telephone interviews (WAPI), in which interviews were conducted by telephone, with the responses simultaneously recorded by the interviewer into an online survey program. In India, due to the greater efforts needed to identify smoking employees who worked for eligible companies, employee interviews were conducted face to face and entered into an online survey program. The surveys were

conducted in the language of each country and took approximately 21 min each.

Separate employer and smoking employee (henceforth referred to simply as “employee”) populations participated in the survey; that is, employers and employees were not necessarily employed by the same companies. Employers were contacted at their workplace, while employees were contacted at home except in Brazil and India, where employees were contacted at work or outside work. The employer sample included approximately 100 employers per country who were either human resources managers or were otherwise involved with decision-making regarding workplace benefits. The employee sample included approximately 250 full-time employed smokers aged 25 years or older in each country (a minimum age of 25 was selected to parallel previous surveys such as the SUPPORT survey). Smokers were defined as those who smoke cigarettes at least once a day; cigar or pipe use was not included in designating smoking status. For both samples, participants were required to work for companies with at least 100 employees, except in Turkey and Sweden where participants’ companies were required to have at least 25 and 50 employees, respectively. This reflects the smaller average size of companies found in Turkey and Sweden.

To recruit the employee population in Korea, Japan, China and Taiwan, adults were telephoned randomly using country-wide phone lists. Random digit dial (RDD) sampling was used in Sweden, France, Germany, Italy, Poland, Spain, Sweden and the UK. In Turkey, RDD was also used in Istanbul and Bursa (Marmara region); Ankara (Central Anatolia); and Izmir (Aegean). In Recife (Pernambuco), Porto Alegre (Rio Grande do Sul), Belo Horizonte (Minas Gerais), Rio do Janeiro (Rio de Janeiro), Sao Paulo (Sao Paulo) and the state of Parana in Brazil, employees were contacted at work through business lists and yellow pages. In India, interviewing was conducted face to face outside businesses that met study criteria in Delhi, Bangalore and Chennai; no more than three interviews were conducted at any one workplace. Survey participants were not reimbursed except in the case of 220 (of a total of 252) employees in Sweden who were paid \$45 in order to ensure that interviewing could be completed.

In China, Korea, Taiwan, Japan, France, Germany, Italy, Sweden, Poland, Spain, UK and India, business lists were used to recruit the employer population. In Brazil and Turkey, business lists and yellow pages were used. Interviewing in Brazil was conducted in Recife (Pernambuco), Porto Alegre (Rio Grande do Sul), Belo Horizonte (Minas Gerais), Rio do Janeiro (Rio de Janeiro), Sao Paulo (Sao Paulo) and in the state of Parana. Interviewing in Turkey was conducted in Istanbul, Ankara and Izmir.

Survey questions were written by Harris Interactive with feedback and guidance from Edelman Public Relations and

Pfizer. The questionnaires were reviewed before they were programmed, to ensure best practice in terms of questionnaire content and clarity. The questionnaires were translated by in-country translators and validated by a third-party translation agency. In-country Pfizer offices also reviewed the translations. After programming, the survey was tested extensively by project staff both in English and in the translated languages. Prior to the start of interviewing, dummy data were generated to check survey logic and programming. After obtaining a sufficient number of completed surveys in each country, data were checked again for survey logic, programming and completeness before interviewing continued. A few interviews in the UK were also monitored to ensure that respondents understood the survey instrument and that interviewers administered the survey properly and as intended.

To remove bias in the survey results (arising from a demographic skew, potential selection biases or a modal bias resulting in desirable instead of true respondent responses), all data were weighted using a rim weighting algorithm, also known as raking (Deming 1943), to ensure that it was representative of smokers and corporate employers at companies with the specified number of employees. The target weights for smoking employees were based on previous surveys where smoking employees were a sub-sample of all adults, while the target weights for employees were based on publicly available data from each country. The same weighting technique was used in all countries; the weighting targets varied based on the information that was available. For the employee surveys in Brazil, Japan and Poland, age, gender and region were weighted where necessary so that they corresponded with their actual proportions in the population. Weighting was performed on the basis of age, gender and education in Spain; age and gender in China; age in India; age, gender, region and education in the UK, France, Germany, Italy, Sweden and Turkey; and age and region in South Korea. For the employer survey, company size by number of employees was weighted where necessary so that they corresponded with their actual proportions in the population. For both the employee and employer data, data were weighted to reflect the relative size of the employed populations in each country. All results are based on the weighted base. Use of these weights assists in producing estimates that are representative of the target populations in each country.

Results

Characteristics of the employees and employers who participated in the survey are presented in Table 1. A total of 1,403 employers (100–101 per county) and 3,525

employees (250–257 per country) participated in the survey. The numbers of employers and employees in each of the 14 participating countries were similar as was their mean age. Approximately, 60% of employers were male compared with 85% of employees. While all of the employees were current smokers (as the employee survey included only smokers), 18% of the employers were smokers.

Characteristics of the workplace sector of participating employers' companies are presented in Table 2. Manufacturing was the single largest sector globally as well as for each region. The "other" sector in Europe comprised almost a quarter of employers' companies, while construction comprised almost a quarter of companies from Brazil. While more than 40% of Asian companies were in the manufacturing section, the remainder of employer organizations were distributed among the other sectors.

Table 3 provides information on cigarettes smoked per workday by employees and perceptions by employers of employee smoking behavior. Employees smoked on average approximately ten cigarettes per day at work; the mean

Table 1 Characteristics of survey participants

	Employers	Employees
Total participants	1,403	3,525
Participants by country		
Brazil	100	253
China	100	250
France	100	251
Germany	100	250
India	100	251
Italy	100	254
Japan	101	250
Poland	101	253
South Korea	100	250
Spain	100	253
Sweden	100	252
Taiwan	101	251
Turkey	100	257
UK	100	250
Participants by region		
Europe	801	2,020
South America	100	253
Asia	502	1,252
Participant characteristics		
% Male	61	85
Mean age (years)	42	40
% Current smoker	18	100
Average number of employees per company	165	200

Table 2 Workplace sector of employer companies

Workplace sector	Accommodation and food services (%)	Administrative support, advertising and business services (%)	Agriculture, forestry, fishing, hunting and mining (%)	Automotive services (%)	Banking, finance, insurance, real estate, travel and legal services (%)	Construction (heavy/special trades) (%)	Education, research, arts, entertainment, recreation, and non-profit organizations (%)	Health-care and social assistance (%)	Manufacturing (%)
Global	5	7	1	2	4	4	3	4	36
UK	2	7	4	0	4	4	9	4	23
Italy	4	2	2	0	5	2	0	2	47
Sweden	0	4	6	4	2	0	1	0	24
France	1	6	3	5	5	5	1	4	18
Germany	0	2	2	0	8	2	0	7	26
Spain	7	1	2	6	1	15	6	2	4
Poland	0	4	6	1	2	7	0	3	33
Turkey	16	1	4	3	4	6	1	2	27
Europe overall	4	4	3	2	5	5	3	4	25
Brazil	5	2	1	7	0	22	0	2	21
South Korea	3	1	2	3	7	4	5	0	56
Japan	3	10	0	2	4	8	3	17	26
China	13	17	0	0	7	0	1	0	44
Taiwan	1	3	0	0	3	2	8	0	65
India	0	4	0	1	1	1	3	0	46
Asia overall	5	9	0	1	4	2	3	4	42
Workplace sector	Pharmaceutical (%)	Printing trade (%)	Public administration/government (%)	Retail trade (%)	Telecommunications, communications, engineering and technology services (%)	Transportation and warehousing (%)	Utilities (%)	Wholesale trades (%)	Others (including waste management) (%)
Global	1	1	1	2	6	4	1	4	12
UK	0	2	6	4	10	3	2	0	14
Italy	4	2	1	0	0	3	0	6	17
Sweden	0	2	12	4	8	4	1	4	21
France	4	1	0	1	2	7	1	5	33
Germany	2	2	3	0	8	2	6	6	21
Spain	1	0	1	0	6	0	0	2	45
Poland	4	0	0	7	6	4	0	10	14
Turkey	0	5	0	5	7	1	1	2	12
Europe overall	2	2	3	2	6	3	2	4	22
Brazil	14	2	1	0	11	8	0	3	2
South Korea	2	0	0	0	10	4	0	2	1
Japan	0	2	0	5	2	12	0	6	2

Table 2 continued

Workplace sector	Pharmaceutical (%)	Printing trade (%)	Public administration/government (%)	Retail trade (%)	Telecommunications, communications, engineering and technology services (%)	Transportation and warehousing (%)	Utilities (%)	Wholesale trades (%)	Others (including waste management) (%)
China	0	0	0	0	0	5	2	4	5
Taiwan	0	0	0	2	3	6	0	0	6
India	1	0	0	0	16	0	0	3	15
Asia overall	0	0	0	1	6	5	1	4	7

Column percentages may not total 100% due to rounding and exclusion of “decline to answer” category

Table 3 Cigarettes smoked per workday by region

Cigarettes/day	Employees (self-report)					Employers (estimates of smoking employees)												
	Global		Europe		South America		Asia		Global		Europe		South America		Asia			
	Mean	(standard deviation)	Median	0 cigarettes	1 cigarette to <1/4 pack	1/4 pack to 1/2 pack	>1/2 pack to <1 pack	≥1 pack	Do not know	Mean	(standard deviation)	Median	0 cigarettes	1 cigarette to <1/4 pack	1/4 pack to 1/2 pack	>1/2 pack to <1 pack	≥1 pack	Do not know
Mean (standard deviation)	9.9 (8.7)	10.2 (8.1)	9.3 (7.7)	9.8 (8.8)	10.4 (8.3)	8.9 (6.1)	7.8 (5.7)	11.5 (9.3)		10.4 (8.3)	8.9 (6.1)	7.8 (5.7)	11.5 (9.3)		10.4 (8.3)	8.9 (6.1)	7.8 (5.7)	11.5 (9.3)
Median	8	9	8	8	10	8	6	10		10	8	6	10		10	8	6	10
0 cigarettes	3%	9%	6%	2%	6%	6%	4%	6%		6%	6%	4%	6%		6%	6%	4%	6%
1 cigarette to <1/4 pack	24%	16%	20%	25%	9%	11%	25%	9%		9%	11%	25%	8%		9%	11%	25%	8%
1/4 pack to 1/2 pack	46%	39%	47%	47%	35%	44%	39%	35%		35%	44%	39%	31%		35%	44%	39%	31%
>1/2 pack to <1 pack	10%	18%	13%	8%	6%	8%	1%	6%		6%	8%	1%	5%		6%	8%	1%	5%
≥1 pack	18%	17%	15%	18%	16%	10%	10%	16%		16%	10%	10%	20%		16%	10%	10%	20%
Do not know	-	-	-	-	27%	21%	19%	27%		27%	21%	19%	31%		27%	21%	19%	31%

Column percentages may not total 100% due to exclusion of “decline to answer” category

Responses from employers are estimates for their smoking employees

Table 4 Time spent smoking during the average workday (min) by region and country

	Mean	Standard deviation	Median	0 min (%)	1–20 min (%)	21–30 min (%)	31–60 min (%)	More than 1 h (%)	Not sure (%)
Employees (self-report)									
Global	60.3	105.8	30	3	32	16	25	23	1
UK	60.8	121.7	40	16	19	12	30	20	3
Italy	59.6	68.6	45	10	17	13	37	22	2
Sweden	22.5	21.5	15	11	49	19	16	4	–
France	57.8	79.8	40	11	25	10	26	27	2
Germany	65.2	93.9	48	8	21	11	27	30	3
Spain	80.6	184.7	20	12	37	17	11	21	2
Poland	66.3	108.5	50	7	16	10	27	31	2
Turkey	51.6	44.3	40	8	23	15	26	25	3
Europe overall	61.2	103.4	30	10	23	13	26	24	2
Brazil	52.8	65.5	40	6	30	11	32	21	0
South Korea	51.6	32.0	50	1	17	18	39	25	0
Japan	30.3	23.5	26	1	46	27	20	6	0
China	75.6	137.8	36	3	34	11	23	27	2
Taiwan	37.0	55.5	30	5	40	21	23	11	0
India	41.3	32.0	30	0	31	24	27	18	0
Asia overall	60.5	107.8	30	2	33	16	24	23	1
Employers (estimates for smoking employees)									
Global	44.2	125.7	30	6	21	21	18	10	22
UK	85.1	485.4	30	2	30	18	12	10	14
Italy	27.8	18.0	20	2	43	18	23	0	8
Sweden	31.6	16.8	30	4	23	37	26	1	9
France	31.9	27.2	20	1	43	21	15	7	14
Germany	42.0	27.8	40	4	18	25	42	6	5
Spain	25.9	20.7	20	8	40	15	17	4	14
Poland	37.1	23.7	30	4	20	25	31	4	14
Turkey	55.9	42.9	45	4	10	25	29	23	5
Europe overall	44.6	185.6	40	4	27	23	25	8	10
Brazil	53.0	52.8	40	6	18	7	28	14	22
South Korea	74.1	45.3	60	0	4	8	57	27	4
Japan	37.4	28.9	30	6	20	35	18	9	12
China	71.6	129.9	40	4	10	5	11	9	59
Taiwan	47.0	80.6	30	4	7	15	5	3	65
India	29.2	30.1	25	15	26	33	5	11	9
Asia overall	43.5	65.5	30	8	17	22	13	10	29

Column percentages may not total 100% due to exclusion of “decline to answer” category

Responses from employers are estimates for their smoking employees

number of cigarettes smoked per day was similar across the three geographic regions (Europe, South America and Asia). On a county-specific basis, employees reported smoking the smallest mean number of cigarettes per day in Sweden (6.3) and India (6.8), while the greatest number was reported in Poland (12.8) and Japan (12.1) (data not shown). Only 18% of employees globally smoked one pack (20 cigarettes) or more per day at work. This ranged from

2% of employees in Sweden and 3% of those in India indicating smoking one or more packs per day to 26% of employees in Turkey and 27% of employees in China (data not shown). Employers' estimates of the number of cigarettes smoked per day by the employees were similar to those of the employees, although over one-quarter of all employers indicated that they did not know how many cigarettes per day an average employee smoked.

Table 5 Response to question, “generally, do you think it is acceptable to smoke in the workplace (for example at your desk)?” by region and country

	Employees		Employers	
	Yes (%)	No (%)	Yes (%)	No (%)
Global	28	71	7	93
UK	26	71	3	97
Italy	41	58	2	98
Sweden	7	91	4	96
France	44	56	4	96
Germany	44	54	14	81
Spain	31	66	3	97
Poland	48	49	7	93
Turkey	39	60	10	90
Europe overall	38	61	7	92
Brazil	5	95	2	98
South Korea	5	95	2	98
Japan	9	91	5	95
China	36	64	13	87
Taiwan	20	80	2	98
India	19	80	4	96
Asia overall	28	71	7	93

Column percentages may not total 100% due to exclusion of “do not know” and “decline to answer” categories

Table 4 provides information on time (in minutes) spent by employees smoking during the average workday and perceptions by employers of employee time spent smoking. The results are provided by region and by country, with

employee results on top and employer results below. Overall, employees estimated spending an average of 1 h per day smoking at work, with approximately one-quarter of employees spending more than 1 h per day. However, substantial variation was observed by country. Among employees in Europe, those from Sweden reported the least amount of time spent smoking per workday (mean of 22 min), while those from Spain reported the most (almost 81 min). A similar variation was seen among Asian employees, ranging from a mean of 30 min in Japan to almost 76 min in China. In contrast, employers estimated that employees spend an average of 44 min per workday smoking (with the median estimate being the same as that of employees, 30 min), although almost one-quarter of employers (22%) responded that they did not know how much time employees spent smoking during the workday. Comparing country-specific estimates of the mean time spent smoking by employees and employers, employers estimated less time than employees for most countries. However, in a number of countries (most notably UK and South Korea), employers estimated more time spent smoking than did employees.

Table 5 presents responses to the question, “Generally, do you think it is acceptable to smoke in the workplace (for example at your desk)?” The majority of smoking employees (71% globally) felt that smoking in the workplace was not acceptable. The greatest proportions of employees indicating that workplace smoking was unacceptable were from South Korea (95%), Brazil (95%), Sweden (91%) and Japan (91%). In contrast, less than half of employees in Poland indicated workplace smoking was unacceptable, with similar proportions from Germany

Table 6 Beliefs about financial and productivity impacts of workplace smoking

	Employees				Employers			
	Global (%)	Europe (%)	South America (%)	Asia (%)	Global (%)	Europe (%)	South America (%)	Asia (%)
Do you think smoking has a negative financial effect on the company or organization you work for?								
Yes	29	23	35	29	46	49	63	44
No	68	72	65	68	51	48	37	54
How much do you think smoking during the workday negatively affects your productivity?								
A great deal	5	4	5	5	2	4	3	1
A moderate amount	11	12	15	11	19	25	18	17
A little	31	20	18	33	38	36	36	40
Not at all	52	62	62	50	38	33	41	41
Please indicate your agreement with the following statement: “non-smokers are more productive than smokers”								
Strongly agree	8	11	9	7	20	20	21	20
Somewhat agree	18	13	10	19	19	20	33	18
Somewhat disagree	36	19	10	40	32	26	11	37
Strongly disagree	33	53	70	29	23	29	33	20

Column percentages may not total 100% due to exclusion of “do not know” and “decline to answer” categories

Table 7 Agreement with the statement: “all workplaces should be smoke-free”

	Employees				Employers			
	Strongly agree (%)	Somewhat agree (%)	Somewhat disagree (%)	Strongly disagree (%)	Strongly agree (%)	Somewhat agree (%)	Somewhat disagree (%)	Strongly disagree (%)
Global	40	33	15	10	68	19	8	4
UK	38	29	11	19	83	12	4	0
Italy	24	25	25	23	70	21	0	8
Sweden	59	20	5	15	90	4	0	6
France	36	23	14	25	65	23	8	4
Germany	21	12	20	40	66	21	6	6
Spain	35	11	12	39	80	13	6	1
Poland	21	12	20	41	69	18	6	5
Turkey	41	16	13	29	51	33	7	9
Europe overall	32	19	16	30	71	19	5	5
Brazil	40	25	12	24	77	16	6	1
South Korea	13	29	28	29	33	39	16	13
Japan	25	13	25	37	52	21	25	1
China	39	38	15	6	59	26	9	4
Taiwan	45	31	19	4	84	11	5	0
India	50	35	11	3	87	9	1	4
Asia overall	42	36	14	7	66	19	10	4

Column percentages may not total 100% due to exclusion of “do not know” and “decline to answer” categories

(54%), France (56%) and Italy (58%). A greater proportion of employers (93%) felt that smoking in the workplace was not acceptable, particularly in Europe (92% of employers vs. 61% of employees) and Asia (93% of employers vs. 71% of employees). In all countries, more employers than employees indicated that smoking in the workplace was not acceptable. In addition, approximately one-half of employees indicated that people have become more opposed to smoking over the past 5 years (data not shown). The impression that opposition to smoking had increased over the past 5 years was stronger among South American employees than among employees from Europe or Asia. Globally, a greater proportion of employers (approximately three-quarters) than employees (48% overall) reported experiencing increased opposition to smoking over the past 5 years. The greatest disparity between employers and employees regarding changes in attitudes toward smoking was seen in Europe and Asia.

Table 6 presents information on beliefs about financial and productivity impacts of workplace smoking. Globally, almost 70% of employees indicated that they did not believe that smoking had a negative financial impact on the company or organization for which they work, with less than 30% responding that smoking did have negative financial impacts. The proportion of employee who indicated that smoking did have negative financial impacts ranged from 14% in Poland and 17% in Japan to 39% in South Korea and 40% in Turkey (data not shown). In

contrast, close to half of employers believed that smoking has a negative financial impact on their organization. This belief by employers was particularly strong in Brazil, India, Spain and Sweden, where approximately two-thirds of employers responded that smoking had a negative financial impact. Employers in Taiwan (18%) and Italy (37%) were less likely to indicate a negative financial effect of smoking.

Table 6 also presents results from employees and employers on the level of impact of smoking. Globally, 16% of employees indicated that smoking negatively affected their productivity to a great deal or a moderate amount. This ranged from 9% of employees in Poland to 32% of employees in Turkey (data not shown). Half of the employees in Asia versus 62% of employees in Europe and South America responded that smoking had no negative impacts on productivity. In contrast, only 38% of employers globally indicated that smoking had no effect on company profitability. A greater proportion of European employers (29%) indicated that smoking negatively affected profitability to a great deal or a moderate amount versus 18% of employers in Asia. The proportion of employers indicating a great deal or a moderate effect on profitability ranged from 6% in Sweden and 10% in Japan to 42% in Germany and 46% in Turkey (data not shown).

More than half of employees (69%) and employers (56%) disagreed that non-smokers were more productive than smokers (Table 6). Only 7% of employees from Spain

and 16% from Japan agreed that non-smokers were more productive, compared with 40% of employees from Turkey (data not shown). However, employers were significantly more likely than employees to agree that non-smokers were more productive. Agreement by employers ranged from 17% in China and 21% in France to 65% in India and 66% in Poland.

Table 7 presents reactions among employees and employers to the statement “all workplaces should be smoke-free”. Although nearly three-quarters of all employees agreed with this statement, there was substantial variation by region, with more than three-quarters of Asian employees, but only 50% of European employees, expressing agreement. Agreement by employees ranged from 33% in Germany and Poland and 37% in Japan to 79% in Sweden and 85% in India. More employers than employees (87% vs. 74% overall) agreed that all workplaces should be smoke-free. Agreement by employers was lowest in South Korea (71%) and Japan (73%), and greatest in the UK (94%), Taiwan (95%) and India (96%).

Discussion

This manuscript presents results from a global workplace smoking survey, focusing on beliefs by smoking employees and employers regarding the acceptability and financial impacts of workplace smoking. A majority of both employees (71%) and employers (93%) responded that workplace smoking was not acceptable; a majority of both groups (74% of employees and 87% of employers) also agreed that all workplaces should be smoke-free. However, as might be expected, employers were more likely to indicate negative financial impacts from workplace smoking than were smoking employees. A greater proportion of employers responded that smoking had a negative financial impact on their organization and that non-smokers were more productive than smokers.

There was substantial geographic variation among the survey responses to a number of questions. A greater proportion of surveyed employees from South America than from Europe or Asia responded that workplace smoking was not acceptable with only 5% indicating that smoking in the workplace was acceptable. More employees from South America and Asia, than Europe, indicated that smoking had negative financial consequences for their organization. Employers from South America were also more likely to agree that smoking had a negative financial impact on their organization than were employers from Asia or Europe, and they also were the most likely to respond that non-smokers were more productive than smokers.

In addition, there was substantial variation in responses based on country even within a geographic region. Among

surveyed employees in Europe, only 7% of those from Sweden indicated that workplace smoking was acceptable compared with 48% in Poland (Table 5). Similarly, 5% of South Korean employees and 9% of employees from Japan indicated workplace smoking was acceptable compared with 36% in China. Employer responses were also highly variable (e.g., 2% of Italian employers vs. 14% of German employers viewed workplace smoking as acceptable), although the overall range for employer responses was generally less than that for employee responses.

We also noted that the consistency of responses to different questions on workplace smoking was also somewhat variable across countries. For example, small proportions of employees from Sweden (7%) and the UK (26%) indicated that workplace smoking was acceptable compared with employees from Germany (44%) and Poland (48%) (Table 5). As would be expected from these responses, a greater proportion of employees from Sweden (79%) and the UK (67%) agreed that all workplaces should be smoke-free compared with employees from Germany or Poland (each 33%) (Table 7). However, while the proportion of French employees responding that workplace smoking was acceptable was similar to that of employees from Germany and Poland (44%); substantially more of these employees (59%) agreed that all workplaces should be smoke-free. This unexpected finding was also observed among employees from South Korea and Japan, while very few of these employees (5 and 9%, respectively) indicated that workplace smoking was acceptable, and only a minority from each country (42 and 37%) agreed that all workplaces should be smoke-free.

Few previous studies have collected data on beliefs regarding workplace smoking from employers and employees. However, there have been a number of studies that assessed attitudes toward smoke-free workplace policies, particularly with the initiation of such policies in a number of European countries. Hilton et al. (2007) surveyed bar workers in Scotland before and after implementation of smoke-free legislation. Before the legislation, a majority of workers (69%) supported the smoke-free policy, although almost half felt that it would damage business. After implementation of the smoke-free policy, support among bar workers increased to 79%, with fewer than 20% expressing concerns about business. In a similar study in Ireland, support for smoke-free workplaces among bar workers increased from 59.5% before implementation to 76.8% afterward. Even among smoking bar workers, support increased significantly from 39.4 to 66.7% (Pursell et al. 2007). Separate analyses from Ireland indicated that while the average staff levels in bars decreased by 8.8% following the smoke-free legislation, the average numbers of customers increased by 11% (McCaffrey et al. 2006). Similar results have been seen in New Zealand, with

substantial support among the public (69%) and bar managers (60%) after implementation of smoke-free legislation as well as increases in restaurant sales (Thomson and Wilson 2006). In the USA, after implementation of a smoke-free bar law in California, the percentage of bar owners or staff who indicated preference for working in a smoke-free environment increased from 17.3 to 50.9% (Tang et al. 2004). The broad level of agreement regarding smoke-free workplaces, even among current smokers, suggests that there are opportunities for employers to encourage and support smoking cessation.

Data from the survey indicate that employers are more likely than employees to believe in negative economic consequences of workplace smoking. Previous studies have provided information on the financial impacts of workplace smoking. Tsai et al. (2005) reported that absenteeism in Taiwan workplaces was greater among male and female smokers (4.36 and 4.96 days per year, respectively) than among their non-smoking counterparts (3.30 and 3.75 days per year, respectively). Excess absenteeism among smokers was associated with costs of \$184 million (US\$) annually. Tsai et al. also estimated that time spent on smoking breaks amounted to productivity losses of \$733 million annually. In Scotland, smoking is associated with annual workplace costs of £40 million for absenteeism, £450 million for productivity loss and £4 million for fires (Parrott et al. 2000). Halpern et al. (2001), in a study of a US airline reservation center, reported that current smokers had approximately 1.6 additional absenteeism days per year compared with former smokers, and productivity among current smokers was approximately 4.5% less than that of former smokers. Wegner et al. (2004) estimated that in 1999, productivity losses associated with smoking in Germany amounted to 0.74% of the country's gross national product. A study from Denmark (Lund and Csonka 2003) reported that smoking was a significant predictor of receiving health-related work disability. Javitz et al. (2006) summarized other workplace costs associated with smoking, including increased costs for housekeeping, maintenance, ventilation and fire insurance. These and other results indicate that despite the beliefs of smoking employees (and some employers) in this survey, smoking does have a substantial negative impact on a business' finances.

This study has a number of limitations. Principal among these is that in some countries, the samples were not selected from the entire eligible population (beyond the use of random digit dialing for identifying employees in certain countries). Given the nature of the survey and the inclusion criteria for participants (e.g., only smoking employees from companies meeting minimum size requirements), a randomly sampled framework for survey participants would have been very difficult. Additionally, since both the employees and employers are likely to be representative of

their specified groups as a result of the weighting process, comparison of the results between the two groups is likely to be appropriate.

An additional limitation is that the employees and employers included in the survey were not necessarily from the same companies or organizations. Although we have compared employer and employee responses, the fact that the two groups come from different worksites limits these comparisons. In addition, large and/or multi-national companies may be more likely to have uniform workplace smoking policies across sites, even when operating in countries that do not require specific policies. This may lead to differences in countries where large or multi-national are more common compared to countries where smaller businesses are more prevalent. Similarly, there may be differences in workplace smoking policies based on a company's workplace sector (e.g., education vs. retail trade vs. manufacturing). However, the number of companies in most of the workplace sectors (Table 2) is relatively small, and survey results evaluating employer attitudes, stratified by these characteristics, are not available.

Further, all data collected in the survey was by self-report; no attempt was made to confirm responses using other data sources. However, as the survey focused on individual beliefs, no other data source could have provided confirmation of these responses. Also, employee populations from South America were contacted while at work; this could potentially bias their responses in comparison to employees from other countries contacted (by random digit dialing) at home.

In addition, only smoking employees were included in the survey. It is likely that non-smoking employees would have more negative attitudes toward workplace smoking and more positive beliefs regarding smoke-free workplaces. In contrast, both smoking and non-smoking employers were included in the survey, but it was not possible to separately analyze responses from smoking versus non-smoking employers.

Despite these limitations, this survey provides important findings. In particular, among both employers and smoking employees, there is broad agreement regarding the unacceptability of workplace smoking and the need for smoke-free workplaces. There is, however, disagreement regarding the specific workplace impacts of smoking, particularly with regard to its impact on productivity and finances. More work is needed to quantify the economic impacts of workplace smoking.

This study provides detailed information on employer and employee beliefs related to workplace smoking from a diverse range of countries. These results suggest directions for subsequent programs and policies to reduce the prevalence of workplace smoking and assist employees with smoking cessation.

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