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# Cigarette smoking; knowledge and attitudes among Mexican physicians

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## Abstract

**Objective.** To determine the prevalence of the smoking habit among Mexican physicians as well as some of their attitudes and information on specific issues concerning smoking. **Material and methods.** In 1993, a survey was carried out among 3 568 physicians of the three major official health care institutions in Mexico City. A questionnaire designed for The Mexican National Survey of Addictions (ENA 1993) was used. Prevalence of cigarette smoking, age of onset, number of cigarettes per day; also information and attitudes concerning smoking were assessed. **Results.** The mean age was 37, 66% were males. Of the 3,488 (98%) surveyed, 26.9% were smokers (62% daily), 20.6% were ex-smokers and 52.5% non-smokers. There were differences related to age and sex ( $p < 0.05$ ). Of daily smokers, 36% smoked between 1 and 5 cigarettes. There was a significant trend among ex-smokers that linked the time they had ceased smoking with the fear to start smoking again. Physicians were well informed of the relationship between cigarette smoking and lung cancer. Over 80% considered tobacco an addictive drug but only 65% were in favor of banning smoking from their workplaces and over 10% were not aware that it is forbidden to smoke inside health care facilities. **Conclusions.** These results differ from other studies that find the prevalence of smoking among physicians lower than in the general population. Our study revealed a greater prevalence of the smoking habit among female physicians and the number of cigarettes smoked per day was greater than in the general population regardless of sex.

Key words: smoking; knowledge, attitudes, practice; physicians; Mexico

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## Resumen

**Objetivo.** Determinar la prevalencia del hábito de fumar entre médicos mexicanos y de algunas actitudes e información sobre cuestiones específicas relativas al tabaquismo. **Material y métodos.** En 1993 se realizó una encuesta entre 3 568 médicos de las tres instituciones oficiales de salud más importantes de la Ciudad de México aplicando un cuestionario diseñado para la Encuesta Nacional de Adicciones (ENA 1993). Se evaluaron la prevalencia del hábito de fumar cigarrillos, la edad de inicio, la cantidad de cigarrillos que se fuman al día, así como la información y actitudes respecto al hábito de fumar. **Resultados.** La edad promedio fue de 37 años y 66% eran hombres. De los 3 488 (98%) médicos encuestados, 26.9% eran fumadores (62% fumaban diario), 20.6% eran ex fumadores y 52.5% no eran fumadores. Hubo diferencias relacionadas con la edad y el sexo ( $p < 0.05$ ). De los fumadores del diario 36% fumaban entre uno y cinco cigarrillos. Se observó una tendencia significativa entre ex fumadores en la que se asocia el tiempo que llevan sin fumar con el temor de comenzar a fumar otra vez. Los médicos estaban bien informados sobre la relación entre fumar cigarrillos y el cáncer de pulmón. Más de 80% consideraron que el tabaco es una droga adictiva; sin embargo, sólo 65% se declararon a favor de prohibir fumar en sus sitios de trabajo y más del 10% no sabían que está prohibido fumar en instituciones de salud. **Conclusiones.** Estos resultados difieren de otros estudios que indican que la prevalencia del hábito de fumar entre médicos es menor que en la población general. Nuestro estudio mostró mayor prevalencia del hábito de fumar entre médicas, y la cantidad de cigarrillos que se fuman al día fue mayor que la que se registra para la población en general, sin importar el sexo.

Palabras clave: tabaquismo; conocimientos, actitudes y práctica; médicos; México

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Epidemiological, clinical and experimental research has shown that cigarette smoking is today one of the major causes of morbidity and mortality and has probably become the main preventable cause of illness and death in modern society. Previous studies at national and international level have signaled physicians as influential example setters of appropriate health attitudes concerning cigarette smoking.<sup>1-3</sup>

It has been estimated that over 2.3 million smokers would quit each year if they would receive information from health care givers on the damage produced by smoking.<sup>4</sup> However, physicians who smoke tend to be unaware of the important role they play as health educators and therefore do not take the time and trouble to encourage their patients to quit smoking and what is even worse, they do not seem to think it is important to provide their patients with scientific information on the risks of smoking.

In 1993, a survey was carried out in seven hospitals of Mexico City. Of the total of physicians surveyed, 65% acknowledged that it was their responsibility to encourage their patients to stop smoking, although 77% believed that despite their recommendations, patients would continue smoking. The same study revealed that 90% of the physicians surveyed knew the consequences of intense chronic cigarette smoking but nevertheless 44% were smokers.<sup>5</sup>

Investigations conducted in the last decade in the United States of America have shown that physicians, dentists and pharmacists are three of the five kinds of professions with the lowest prevalence of cigarette smoking and that physicians have lowest prevalence of all. Also, physicians who do smoke, smoke less.<sup>6,7</sup>

To our knowledge, only limited data exist on the prevalence of cigarette smoking among health care givers in Mexico, especially among physicians. It was thus necessary to investigate this information in view of the important role doctors play as example setters of appropriate health behavior in their communities. Therefore, the main purpose of this study was to determine the prevalence of cigarette smoking among a sample of Mexican physicians and to test their attitudes and information on specific issues concerning cigarette smoking.

## Material and methods

The sample studied was proportionally obtained from the three major official health care institutions in Mexico City rendering a total sample size of 3 568 subjects. Data were obtained through self administered questionnaires answered anonymously during the month of May 1993. Assignment was proportional ac-

cording to the number of physicians registered in each of the institutions included in the study (Instituto Mexicano del Seguro Social, Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado y Secretaría de Salud).

The questionnaire included standard questions from The Mexican National Survey of Addictions (ENA 1993)<sup>8</sup> on patterns of smoking, demographic variables, as well as on information and attitudes concerning the health consequences of cigarette smoking.

For the purpose of this paper: cigarettes were the only form of tobacco exposure considered, since the use of other products is rare in Mexico.<sup>8</sup>

Smokers were individuals having smoked over 100 cigarettes in their lifetime and who continued to smoke at the time of the study.

Ex-smokers were those who had in some period of their lifetime smoked over 100 cigarettes. Non-smokers were subjects who had never smoked.

## Statistical analysis

A descriptive analysis was used to estimate the prevalence of the smoking habit. Statistical comparisons were made using univariate analysis and differences were evaluated by the  $\chi^2$  test as well  $\chi^2$  trends. Finally, a logistic regression model was applied to adjust simultaneously for control variables and to estimate the risk in relation to the dependent variable (smokers). The possible interactions between exposure and control variables were tested through the difference between the deviance of the model with and without interactions, using the  $\chi^2$  test distribution and a  $p$  value  $< 0.05$ . This analysis was done using STATA 4.0.

## Results

Overall response rate was 98%, therefore, the analysis of this study was based on questionnaires answered by 3 488 subjects. Of all the physicians surveyed, 66.2% ( $n = 2 310$ ) were males and 33.8% ( $n = 1 178$ ) were females. The median age was 37 years. The age group allocation was 26.4% between 20 and 32, 47.1% between 33 and 43 and 26.5% over 44 years old. There was significant difference between males and females in each age group ( $p < 0.05$ ).

The prevalence of smokers was 26.9% ( $n = 938$ ; 95% CI 25.4-28.4); 20.6% ( $n = 717$ ; 95% CI 19.2-22.0) were ex-smokers and the prevalence of non-smokers was 52.5% ( $n = 1 833$ ; 95% CI 50.9-54.2). There were significant differences related to age and sex. In all age groups the number of males was higher than females. It was possible to observe a trend to smoke among the young-

er female physicians while the percentage of male smokers remained stable regardless of the age group (Table I).

Over half the subjects reported the maximum number of cigarettes smoked per day as one to five. The number of smokers in the other category decreased while those that smoke twenty or more cigarettes a day increased. Of all the subjects surveyed, 62% smoked every day including more males than females (63.2 and 57.6%, respectively) (Table II).

Of those who had a daily habit (62%), 34% men and 44% women smoked a maximum of between 1 and 5 cigarettes a day, followed by 26% males and 33% females who smoked between 6 and 10 cigarettes a day, 16.3% and 10.5% respectively who smoked between 11 and 15 cigarettes a day, 10.3 and 4.2% between 16 and 19 and 13.5% males and 8.4% females smoked twenty or more cigarettes per day. The mean age of onset was  $17.7 \pm 4.3$  for males and  $19.5 \pm 4.8$  for females (Table II).

The number of ex-smokers was significantly higher for males than for females ( $p = 0.0001$ ). Among men, the number of ex-smokers increased with age, while female ex-smokers were younger (Table I). As for the age of onset, the mean age for female ex-smokers was  $19.4 \pm 5.1$  and for males  $16.5 \pm 4.1$ .

Concerning the time when ex-smokers had quit smoking, 20% had given up smoking less than a year before; 22% one to three years; 29% four to 10 years and 29% over 10 years before the survey. There were significant differences related to sex in those that had

given up smoking four years before the survey. Of the total of ex-smokers, 17% were still afraid to start smoking again, with no significant differences related to sex ( $p = 0.3$ ).

When ex-smokers were questioned about their fear of starting to smoke again, the  $\chi^2$  for trends showed a significant difference between the time of quitting and the fear of regaining the habit again. The risk decreased in relation to the number of smoke tobacco years ( $p = 0.00007$ ).

Table III shows the number of affirmative answers to specific issues concerning information and attitudes vs cigarette smoking. There seems to be a consensus regarding the status of tobacco as an addictive drug. When subjects were questioned, there were statistical differences ( $p < 0.05$ ) among the study groups. Non smokers answered affirmatively in a greater proportion (85.7%) than the other categories. Interestingly, ex smokers gave less affirmative answers to this question. There were no significant differences related to age and sex (Table IV).

Practically all physicians surveyed agreed that "smoking tobacco produces lung cancer". There were no statistical differences related to sex or smoking status (Tables III and IV), but it is important to point out that young physicians were significantly better informed ( $p < 0.05$ ) of the fact that smoking tobacco produces lung cancer.

Of the two questions related to the social image given by smoking tobacco, that is, whether "smokers are more socially accepted" or whether "smokers are

**Table I**  
**PREVALENCE OF SMOKING PATTERNS BY AGE AND GENDER BETWEEN HEALTH CARE GIVERS.**  
**MEXICO CITY, 1993**

	Smokers (n= 249)		Ex-smokers (n= 147)		Non-smokers (n= 813)		Total	
	n	%	n	%	n	%	n	%
Female								
20-32*	72	6.1	41	3.5	255	21.6	368	31.2
33-43*	137	11.6	80	6.8	367	31.2	584	49.6
> 44*	37	3.1	25	2.1	164	13.9	226	19.2
Total	246	20.8	146	12.4	786	66.7	1 178	100.0
Male								
20-32*	176	7.6	90	3.9	285	28.5	551	23.8
33-43*	316	13.7	254	10.9	493	49.3	1 063	46.0
> 44*	200	8.6	227	9.8	269	26.9	696	30.1
Total	692	29.9	571	24.7	1 047	45.32	2 310	100.0

\*  $p < 0.05$  ( $\chi^2$ )

Note: The difference between the total number of individual in each smoking pattern and the total sample is due to missing values for certain demographic variables

**Table II**  
**COMPARISON OF CHARACTERISTICS OF SMOKERS AND EX-SMOKERS BETWEEN HEALTH CARE GIVERS.**  
**MEXICO CITY, 1993**

Variables	Smokers				Ex-smokers			
	Females		Males		Females		Males	
	n	%	n	%	n	%	n	%
Age of onset								
< 15	48	19.4	221	32.0	28	19.7	249	45.1
16 - 19	85	34.4	274	39.6	58	40.8	206	37.3
≥ 20	114	46.2	196	28.3	56	39.4	97	17.6
No. of cigarettes								
1 - 5	154	62.4	361	52.3	95	67.4	241	44.2
6 - 10	53	21.5	138	20.0	26	18.4	134	24.6
11 - 15	18	7.3	81	11.7	8	5.7	49	8.9
16 - 19	9	3.6	48	6.9	5	3.5	35	6.4
≥ 20	13	5.2	62	8.9	7	5.0	86	15.8
Frequency								
Daily	143	57.6	438	63.2	87	61.3	359	66.1
Weekly	55	22.2	124	17.9	25	17.6	84	15.5
Monthly	7	2.8	26	3.7	1	0.7	12	2.1
Occasional	43	17.3	105	15.2	29	20.4	88	16.2

Note: The difference between the total number of individual in each smoking pattern and the total sample is due to missing values for certain demographic variables

**Table III**  
**PERCENTAGE OF POSITIVE RESPONSES ON SPECIFIC KNOWLEDGE AND ATTITUDES RELATED**  
**TO SMOKING BETWEEN HEALTH CARE GIVERS. MEXICO, 1993**

	Smokers	Daily smokers	Ex-smokers	Non-smokers
Tobacco is a drug*	82.6	82.9	81.3	85.7
Tobacco produces lung cancer	95.9	95.4	97.5	97.0
Smoking is not allowed* inside health care institutions	88.8	87.2	96.4	95.1
Smokers are more socially accepted	9.2	8.7	6.0	7.4
Smokers are more* attractive	4.2	4.1	0.7	1.2
Declare work places* tobacco-free	65.0	61.2	76.0	71.0

\*  $p < 0.05$

more sexually attractive", as expected, smokers agreed significantly more than ex-smokers or non-smokers ( $p < 0.05$ ) (Table III). Among female smokers and ex-smokers there was no difference concerning these two questions, but in the case of male physicians there was a significant difference in the response of smokers vs ex-smokers ( $p < 0.05$ ) (Table IV).

When smokers and non-smokers were asked whether "smokers are more socially accepted", there

was no difference between both groups, but when they were asked if "smokers are more sexually attractive", the answer of smokers differed from non-smokers and this was true for both sexes ( $p < 0.05$ ) with no difference for age (Table IV).

Finally, subjects were asked the following questions: Is smoking allowed inside health care institutions? and Would you agree if smoking were banned from work places? Again, as expected, the number of

**Table IV**  
**COMPARISON OF KNOWLEDGE AND ATTITUDES AMONG SMOKERS VS EX-SMOKERS BETWEEN HEALTH CARE GIVERS.**  
**MEXICO, 1993**

	Females (%)				Males (%)			
	Smokers vs ex-smokers		Smokers vs non-smokers		Smokers vs ex-smokers		Smokers vs non-smokers	
Tobacco is a drug	85	89	85	87	82	79	82	85
Tobacco produces lung cancer	95	98	95	96	96	97	96	98
Smoking is not allowed inside health care institutions	88	95*	88	95*	89	97*	89	95*
Smokers are more socially accepted	7	7	6	6	10	6*	10	8
Smokers are more attractive	2	1	2	1*	5	1*	5	2*
Declare work places tobacco-free	66	66	66	65	65	78*	64	75*

\*  $p < 0.05$

positive answers to the first question was significantly lower among male and female smokers when compared with the other categories ( $p < 0.05$ ) with no difference for age (Tables III and IV).

The least support to declaring work places tobacco free was given mainly by the younger (20-32 years) male smokers (Tables III and IV).

Upon close examination of the multivariate model it was observed that, as exposure variables (attitudes), the following were significantly associated to the dependent variable (smokers): "Smoking is not allowed inside health care institutions", "Smokers are more attractive" and "Declare work places tobacco-free". As control variables: "Age" and "Sex". An interaction between "Declare work places tobacco-free" and "sex", and the variable age was identified as a confounder (Table V).

## Discussion

Our findings are not consistent with other studies that reveal that physicians are smoking less than the general population. When our results were compared

with data of smokers between 19 and 65 years old from The National Survey of Addictions (ENA 1993),<sup>8</sup> there were no significant differences between the two sample studies, but when stratified by sex there was a higher proportion of smoking females, 20.8% (95% CI 18.6-23.2) compared with the prevalence of the general female population studied, 16.2% (95% CI 15.4-17.1). On the other hand, when males from the two studies were compared, there was a higher proportion of males among the general population, 44.6% (95% CI 43.3-45.9) than among male physicians, 30% (95% CI 28.1-31.8).

It is also noteworthy that our results do not agree with findings from other studies in that physicians smoke less cigarettes per day than the general population. Once more, when we compared data from the National Survey of Addictions (ENA 1993)<sup>8</sup> and those of the present study, it was determined that while only 16% of the general male and female population smoke more than 11 cigarettes per day, 25% of the physicians smoke these number of cigarettes daily, regardless of sex. In general, this means that both male and female physicians are smoking more.

**Table V**  
**MODEL OF LOGISTIC REGRESSION**

	Coefficient	OR	$p > z$	95% CI	
Smoking is not allowed inside health care institutions	0.7981	2.22	0.000	0.5048	1.0914
Smokers are more attractive	0.9578	2.60	0.000	0.4356	1.480
Declare work places tobacco-free	0.0049	1.01	0.975	-0.2987	0.3086
Gender	0.8393	0.99	0.000	0.5420	1.1366
Age	-0.0079	2.31	0.072	-0.0165	0.0007
Declare work places tobacco-free and Gender	-0.5091	0.60	0.006	-0.8728	-0.1454
Constant	-1.1260	-	0.000	-1.5225	-0.7295

Studies conducted by Tessiers *et al.* and Hesrud<sup>9,10</sup> in 1993 reported a greater prevalence (32%) than ours (26.9%). Previous studies of physicians working in hospitals in Mexico reported a prevalence ranging from 37 to 44%.<sup>5,11</sup>

The age of onset also differed from the findings of other studies that report the age of onset as younger than 20 whereas in our study 33% of the physicians reported having started smoking after their twenties. This was even more evident among the female physicians studied (46.2%).<sup>5,12</sup>

Despite their knowledge that tobacco is an addictive drug, that smoking is banned inside health care institutions and that there is a significant relationship between smoking and lung cancer, a great number of physicians continue smoking and even worse is the fact that these figures are growing.

The results of our study also reveal that, although the subjects were aware of the health consequences of smoking cigarettes, this awareness did not have an impact on their behavior and it is possible to establish that the decision to smoke is independent from the level of information. This is true regarding social attitudes, for example, a high proportion of the subjects did not consider smokers more socially accepted or more sexually attractive yet they continue to smoke.

Regarding the question as to whether workplaces should be declared tobacco-free, two facts should be pointed out. The first one is that there seems to be a permissive attitude in non-smoker physicians towards smoking in their work areas and the second one is the high number of physicians who smoke that are in favor of banning smoking from work places. The latter could represent a strategy to force themselves to quit smoking or at least to reduce the number of cigarettes they smoke during working hours, other strategies having failed. This has been observed in institutions where smoking is prohibited.

As for the interaction between "Declare work places tobacco-free" and sex, instead of considering sex as a biological variable it should better be defined as

gender, as it seems mostly associated to attitudes, which explain cultural and social behavior of the physicians studied.

In conclusion, although the study has certain limitations such as the fact that the results were taken from self-reported questionnaires and that only one sample of Mexican physicians was studied, nevertheless, our findings emphasize the need of a greater awareness among Mexican physicians of their role as educators.

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