Use of Smoking Cessation Interventions by Physicians in Argentina

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Abstract

Background—Physician-implemented interventions for smoking cessation are effective but infrequently used. We evaluated smoking cessation practices among physicians in Argentina.

Methods—A self-administered survey of physicians from six clinical systems asked about smoking cessation counselling practices, barriers to tobacco use counselling and perceived quality of training received in smoking cessation practices.

Results—Of 254 physicians, 52.3% were women, 11.8% were current smokers and 52% never smoked. Perceived quality of training in tobacco cessation counselling was rated as very good or good by 41.8% and as poor/very poor by 58.2%. Most physicians (90%) reported asking and recording smoking status, 89% advised patients to quit smoking but only 37% asked them to set a quit date and 44% prescribed medications. Multivariate analyses showed that Physicians' perceived quality of their training in smoking cessation methods was associated with greater use of evidence-based cessation interventions. (OR = 6.5; 95% CI = 2.2–19.1); motivating patients to quit (OR: 7.9 CI 3.44–18.5), assisting patients to quit (OR = 9.9; 95% CI = 4.0–24.2) prescribing medications (OR = 9.6; 95% CI = 3.5–26.7), and setting up follow-up (OR = 13.0; 95% CI = 4.4–38.5).

Conclusions—Perceived quality of training in smoking cessation was associated with using evidence-based interventions and among physicians from Argentina. Medical training programs should enhance the quality of this curriculum.

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Conflict of Interest

None.

Ethical Standards

The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008.

Introduction

Tobacco is the world's leading cause of preventable morbidity and mortality (2012) and promoting cessation is one of the most effective measures to improve population's health. In Argentina, a middle income Latin American country, the prevalence of tobacco use has decreased by about 50% in the past 10 years from 37% in 2004 (Secretaria de Programacion para la Prevencion de la Drogadiccion y la Lucha contra el Narcotrafico, 2004) to 22.1% in 2012 (Ministerio de Salud de la Nacion, 2012) presumably as a consequence of the tobacco control policies implemented. Nevertheless, smoking prevalence and per capita consumption are high, tobacco use results in 40,000 annual deaths, and treatment of tobacco-related diseases accounts for 12% of the total health economic burden (Pichon-Riviere et al., (Mayo 2013)). Physicians have an important potential role in the implementation of smoking cessation interventions even though the prevalence of tobacco use among physicians and medical students in Argentina has been similar to that of the general population in previous surveys (Gigliotti et al., 2013; Mejia, Martinez, Gregorich, & Perez-Stable, 2010; Tambussi, Schoj, Perel, Zabert, & Ortiz, 2003; G. Zabert, Chatkin, & Ponciano-Rodriguez, 2010; G Zabert&Verra,2004; G Zabert, Videla, & Verra, 2005; Zylbersztejn et al., 2007).

There is substantial evidence supporting the efficacy of different types of clinician implemented pharmacological andbehavioural interventions (Cahill, Lancaster, & Green, 2010; Cahill, Stead, & Lancaster, 2012; Hughes, Stead, & Lancaster, 2007; Lai, Cahill, Qin, & Tang, 2010; Lancaster & Stead, 2004; Lemmens, Oenema, Knut, & Brug, 2008; Stead & Lancaster, 2005; Stead, Perera, & Lancaster, 2006; Stead et.al., 2013). Moreover, brief physician-implemented counselling interventions can increase the absolute rate of cessation by 1% to 3% (Alba, Murillo, & Castillo, 2013; Stead et al., 2013). However, despite the efforts to promote physician-led interventions for smoking cessation, few clinicians consistently implement them (Huang et al., 2013; Kruger et al., 2012; Lee et al., 2007; Pipe, Sorensen, & Reid, 2009) particularly in Latin American countries (Gigliotti et al., 2013; Juliao et al., 2013; Mejia et al., 2010). Physicians have also reported lack of training to help their patients quit and limited time for counselling during clinic visits (Perez-Stable et al., 2001; Soto Mas et al., 2005; Vogt, Hall, & Marteau, 2005; Warren, Jones, & Chauvin, 2008).

The main predictors of physician-implemented smoking cessation interventions were specific training (Huang et al., 2013; Sadowski, Ruffieux, & Cornuz, 2009; Soto Mas et al., 2008) (Schnoll, Rukstalis, Wileyto, & Shields, 2006; Twardella & Brenner, 2005; Zhou et al., 2010), clinician self-efficacy (Sadowski et al., 2009; Soto Mas et al., 2008) (Schnoll et al., 2006), and younger physician age (Schnoll et al., 2006). Physician smoking status was a negative predictor of cessation success in several studies (Huang et al., 2013; Juliao et al., 2013; Ng et al., 2007; Noble, Perez Stable, & Casal, 1996; Pipe et al., 2009; Ulbricht et al., 2009), but it showed no effect on others (Gigliotti et al., 2013; Sadowski et al., 2009). Physician gender has also shown conflicting results (Frank & Harvey, 1996;Soto Mas et al., 2005; Soto Mas et al., 2008; Zhou et al., 2010). Studies indicated that primary care physicians were more likely to implement cessation interventions with their patients compared to specialists (Kaplan et al., 2004; Perez-Stable et al., 2001).

Studies from Argentina have shown low rates of smoking cessation counselling by physicians and that smoking cessation training is insufficient (Noble et al., 1996; Tambussi et al., 2003; Zabert & Verra, 2004; Zabert et al., 2005; Zylbersztejn et al., 2007). Several Argentinean studies have identified previous tobacco training as a positive predictor of smoking cessation interventions among physicians from different specialties (Gigliotti et al., 2013; Mejia et al., 2010; Zylbersztejn et al., 2007), and two of them found an association between tobacco use in physicians and lower rates of implementing tobacco cessation interventions (Mejia et al., 2010; Zylbersztejn et al., 2007). However, most of these studies were conducted several years ago, before the implementation of the National Tobacco Control Law in 2013 which among other public health components includes the dissemination of educational interventions targeting physicians and medical students in the clinical practice guidelines launched by the Ministry of Health in 2005 (Ministerio de Salud de la Nacion, 2005). This study aimed to evaluate knowledge, attitudes, beliefs, and smoking cessation practice patterns in a sample of primary care physicians and gynaecologist/obstetricians from six different clinical systems in Argentina.

Methods

Study Design and Settings

As part of a smoking cessation randomized control trial which was designed to evaluate the impact of a physician educational intervention on increased smoking cessation among their patients, we conducted a cross-sectional baseline survey of general internists, family physicians, and gynaecologist/obstetricians based in six different clinical systems in the cities of Buenos Aires, La Plata and Olavarria, Argentina including private practices, health maintenance organizations, and clinics in the public health care system. The survey measured physicians' baseline knowledge, attitudes and practices prior to the start of the trial. Only baseline data are reported upon here.

The six selected medical centres varied by patient characteristics and type of health care system. Within Buenos Aires, Medicus is a private health care plan using a fee-for-service model and covers a patient population of middle and high socioeconomic status. Hospital Italiano is a staff model health maintenance organization (HMO) serving mostly an employed lower middle class population with nine sites located in Buenos Aires. Centro de Educacioón Meédica e Investigacioón Cl´ínica (CEMIC) is an HMO using a fee-for-service model that cares for employed lower middle class patients and is located in Buenos Aires. Olavarria is a municipality located 4 hours from Buenos Aires; the public health system has 31 clinics located in rural areas and cares for working class and poor underserved populations. The public health system from the city of La Plata has 26 urban clinics serving mostly poor patients. Hospital Aleman is a community hospital in Buenos Aires with a health plan using a fee-for-service model and most patients are from upper middle class background. Each of the participant institutions' institutional review board (IRB) and an NIH-certified IRB based in CEMIC approved the protocol.

Participants

All practicing primary care physicians and gynaecologist/obstetricians from the six clinical systems who saw more than 100 patients a month were invited to participate in this study. Exclusion criteria included explicit refusal to participate or refusal to sign the informed consent forms. In addition, tobacco cessation experts from smoking cessation clinics in each institution were excluded from the study.

Measures

The questionnaire included items from the CDC Global Health Professional Student Survey (World Health Organization, 2013), a physician survey implemented in Argentina (Zabert et al., 2005) and items developed by the authors. English items were translated into Spanish, back translated to English and reviewed by three bilingual Argentinean investigators. Pre-test of the instrument was conducted with physicians of the major teaching hospital (Hospital de Clinicas, University of Buenos Aires). The survey was administered face-to-face prior to randomization and consisted of 110 items and took about 30 minutes to complete.

Survey questions included physicians' demographic background, medical training, type of medical practice (public or private hospital), personal history of tobacco use, attempts to quit if current smoker, and their personal knowledge, beliefs and attitudes about tobacco use. Questions regarding smoking cessation counselling provided to patients were framed to cover a clinician's usual practice with patients. These included the self-reported use of smoking cessation interventions considered to be effective and categorized into the six outcomes defined below. The categories of items follow the recommended pattern of asking, assessing and motivating, advising, assisting, and following-up included in behavioural interventions and pharmacological therapies for tobacco use. Physicians were asked to rate the perceived quality of training in smoking cessation interventions received either in medical school or after graduation.

Outcomes

We created six binary outcome variables based on components of evidence-based clinician smoking cessation interventions (Fiore et al., May 2008). These were: (1) asking about smoking and recording this in the chart (2 items required); (2) advising to quit or reduce cigarettes or to set a quit date (3 items, one required); (3) motivating to quit (4 items, all required); (4) assisting the patient in quitting by providing written materials, referring to a website, referring to a quit line, discussing management of abstinence symptoms, providing individual cognitive therapy or providing behavioural therapy (6 items, 2 required); (5) prescribing medications from one of three categories of medications (4 items, 2 required); and (6) scheduling a follow-up appointment or telephone call (2 items, one required).

Statistical Analysis

We describe the distributions of demographic variables (age, gender), years since graduation from medical school, and smoking behaviour, in the total sample and separately by physician specialty of internal medicine, family medicine and gynaecology. Responses from

general internists and family physicians were combined as both were primary care physicians, and compared to gynaecologist/obstetricians for the analysis.

Bivariate analyses were also performed to explore the relationship between main potential predictors and the six defined outcome variables: asking about and recording smoking status in the chart, advising to quit, motivating to quit, assisting to quit, prescribing medications, and follow-up contact. Bivariate analyses were conducted for all physicians and also stratified by specialty (primary care and obstetrics/gynaecology).

Multivariate logistic regression models of each outcome estimated effects of physician age (<40, 40–54, 55+), gender (male/female), self-reported quality of tobacco training (very good/good, fair, bad/very bad/no training), and current smoking behaviour of physician (current smoker, never/past smoker). All models were fit via generalized estimating equations to accommodate clustering of physicians within institutions.

Results

A total of 620 physicians were invited to participate, 173 gynaecologists and 447 general internists and family physicians; 254 (41%) who agreed to participate were randomized and completed the survey (Table 1). Of the 254 respondents, 133 (52.3%) were women and there were 57 (22.4%) family physicians, 124 (48.8%) general internists, and 73 (28.7%) gynaecologist/obstetricians. Physicians' mean age was 44.5 years with an average 18.6 years (range 1–49) of experience in medical practice. The sample included 108 physicians from the Hospital Italiano, 18 from CEMIC, 26 from Centro Medicus, 24 from the Hospital Alemaán, 30 from the Olavarr´ıa clinics and 48 from La Plata. There were 133 (52.4%) never-smokers, 91 (35.8%) were former smokers, and only 30 (11.8%) were current smokers at the time of the survey.

The perceived quality of general training in smoking cessation was evaluated as very good or good by 104 (41.8%) physicians, 56 (22.5%) rated their training as fair and 89 (35.74%) as poor, very poor or no training at all. Of the 104 physicians reporting very good or good training, 97 (93.3%) were general internists or family physicians. Most medical school training focused on health damage caused by tobacco (84%), and only 8.4% and 17.9% reported having received training in psychosocial or behavioural smoking cessation and in nicotine replacement therapies (NRT), respectively. In residency training there was a higher level of reported training in psychosocial or behavioural therapies (45.9%) and NRT (64.6%). Stated barriers to implementing smoking cessation interventions included lack of time during the visit (68.3%) and the lack of knowledge (68%).

Physician-Reported Smoking Cessation Practices

The vast majority of the physicians (96.8%) reported knowing that tobacco smoking was addictive, 31.1% reported that they knew the meaning of a 'brief smoking intervention' defined by advising every patient who smokes to quit and discuss tobacco use for at least 3 minutes (Fiore et al., May 2008), and 96.8% indicated a need for further training in smoking cessation. Most physicians reported asking their patients about smoking (89.8%) and recorded the information in their medical history (86.6%). The self-reported rate of

physician cessation counselling of smokers was 89.4%. Setting a quit date was implemented by 37.7% of the physicians and providing strategies to manage withdrawal symptoms and avoid weight gain was reported by 36.3% and 41.4%, respectively. Patient motivation to quit was evaluated by 57.5% of the respondents, but only 26.6% used behavioural therapy to help patients quit smoking. With respect to pharmacological treatments 39% recommended NRT, 44.7% bupropion and 18.6% varenicline. Follow-up visits for relapse prevention were performed by 34.9% of physicians. The bivariate analyses showed that physician age, gender, perceived quality of tobacco cessation training, perception of time as a barrier, and physician specialty were each related with at least some of the outcome variables (Table 2).

Predictors of Smoking Cessation Intervention Components

We fit six logistic regression models of cessation intervention components that could be implemented by physicians (Table 3). Those physicians with highest perceived quality of smoking cessation training were significantly more likely to report asking about and recording patient smoking, compared those with those with the lowest perceived quality (OR = 6.5; 95% CI = 2.2–19.1). All physicians who reported very good/good perceived quality of tobacco cessation training responded that they 'advise to quit, to reduce, and to set a quit date' among their patients. Similar results were obtained for 'motivate to quit', with quality of training as the only significant effect: OR = 7.9 (3.4–18.5).

Clinicians with higher perceived quality of training in smoking cessation were significantly more likely to report assisting their patients to quit (OR = 9.9, CI = 4.0– 24.2), prescribing cessation medications (OR = 9.6, CI = 3.5–26.7), and arranging follow-up appointments (OR = 13.0, CI = 4.4–38.5). For the outcome of prescribed medications, significant effects were found for gender with women physicians less likely to prescribe medications (OR = 0.4; 95% CI = 0.2–0.8). Physicians aged 55 years and older were less likely to schedule follow-up visits or telephone appointments to assist their patients in cessation (OR = 0.2; 95% CI = 0.03–0.9). Disagreement with the statement that time is a barrier to cessation counselling was only significant in predicting follow-up appointments (OR = 2.2; 95% CI = 1.1–4.6). Finally, primary care physicians were significantly more likely to assist their patients in quitting (OR = 4.9; 95% CI = 1.8–13.4), prescribe medications (not one gynaecologist/obstetrician reported prescribing) and to arrange for a follow-up visit or telephone call (OR = 12.7; 95% CI = 2.77–58.3) (Table 3).

Discussion

The main result of our study was that self-reported perceived quality of tobacco-cessation training was the only significant predictor of use of all assessed tobacco cessation process outcomes (ask, advise, motivate, assist, prescribe, and follow up) assessed in the survey. This finding is consistent with other studies conducted in Argentina (Gigliotti et al., 2013; Mejia et al., 2010), as well as in the US (Huang et al., 2013; Sadowski et al., 2009; Soto Mas et al., 2008). Given the evidence that supports use of physician-implemented smoking cessation interventions, this reinforces the need to standardize and strengthen training in the medical school curricula as well in the residency programs. The Argentinean Congress passed a new National Tobacco Control Law in 2011 and the Executive Branch then

implemented the law in 2013. One provision of the law establishes the requirement to include the topic of treatment of tobacco addiction in all health care professional training curricula (Ley 26.687, Regulacion de la publicidad, promocion y consumo de los productos elabo-rados con tabaco, 2011). While there is significant progress in the implementation of smoking cessation training in different professions, the overall implementation process is uneven. Furthermore, cognitive-behavioural and pharmacological treatments of tobacco use are not included in the national 'ProgramaMedico Obligatorio' (PMO), which defines the minimum standard of chronic health care benefits that must be provided by the state-supported health insurance (*seguro social*) or private prepaid health insurance without exclusion ofpre-existing conditions. TheNa-tional Tobacco Control Law does not include treatment of tobacco addiction in the PMO. Thus, many disadvantaged smokers dependent on the public health care system face challenging financial barriers to access smoking cessation services.

Among these physician participants we found a prevalence of approximately 12% tobacco consumption, which is about half of the overall population prevalence according to the Global Adults Tobacco Survey in 2013 (Ministerio de Salud de la Nacion, 2012). The smoking rate reported in this study is lower than that reported in previous studies of 20% to 35% prevalence among physicians in Argentina (Gigliotti et al., 2013; Minervini et al., 2006; Tambussi et al., 2003; Zabert et al., 2005; Zylbersztejn et al., 2007). Our finding of a lower prevalence may be explained by selection bias of the sample studied because physicians had to sign an informed consent to participate in research that included randomization to a follow-up educational intervention. Thus selecting a higher proportion of non-smokers than smokers in the study sample might be expected. Furthermore, the medical institutions that agreed to participate are centres of excellence in health care and affiliated with academic institutions with residency training programs which may also lead to less smoking. Regardless, the prevalence of tobacco consumption has decreased in the entire population of Argentina, and in recent years laws creating smoke-free indoor environments have been implemented in all work sites including health centres, and this may have impacted and lowered the consumption of tobacco among physicians.

Our study also suggests that higher perceived quality of training leads to greater implementation of smoking cessation interventions by physicians. Compared to an earlier study of physicians at Buenos Aires Hospitals where 11% reported prescribing NRT, 40% of physicians in this study reported prescribing NRT (Zabert et al., 2005). In our study, 95% of physicians recognized smoking as an addiction and 41% reported good or very good training in smoking cessation, compared to only 44% and 33%, respectively, in an earlier study (Minervini et al., 2006). A survey of clinicians conducted in 1994 in the same medical centres in Buenos Aires showed that only 6% of physicians used effective smoking cessation interventions as defined at that time (Noble et al., 1996) compared to 30% of clinicians reported using behavioural therapy and 50% prescribing NRT in our current study. Higher perceived quality smoking cessation training was also far more common among primary care clinicians compared to gynaecologist/obstetricians in this study. This is particularly important considering that, in Argentina, women during their reproductive years are almost exclusively cared for by gynaecologist/obstetricians. Thus there is a potential missed

opportunity to educate and intervene to decrease tobacco consumption in women and reduce exposure to tobacco smoke at home.

This study found only two self-reported differences by gender and age. Men prescribed more medications to help patients quit and physicians aged over 55 years were less likely to arrange follow-up for smoking patients motivated to quit. Interestingly, unlike other studies, physicians who were current smokers were not less likely to use cessation components and are similar to findings from a US study. (Soto Mas et al., 2005; Soto Mas et al., 2008) The most frequently identified barriers to implementing cessation interventions were lack of time and lack of training that is similar to those reported by others (Blumenthal, 2007; Kaplan et al., 2004) and this was associated with decrease likelihood of arranging follow-up.

Our study has several important limitations. First, the selection of physicians in the six clinical systems whose leadership was willing to participate in the research project may limit the representativeness of the study sample and limits its external validity. We also relied on self-report and were not able to verify any of the evaluated behaviours from direct observation. Finally, we used a cross-sectional design and cannot rule out the possibility that the self-reported outcomes may have causal impact on perceived quality of training.

In summary, our study indicates that self-reported quality of smoking cessation training is the most important predictor for using evidence-based smoking cessation interventions. This suggests an opportunity to strengthen the training of the health care team in general and of physicians in particular to help their patients quit smoking. While over time there may be relatively higher medical training in the subject when compared with the past, the rates of knowledge and use of effective cessation resources remain low, especially among gynaecologist/obstetricians, when compared with primary care physicians. Wider implementation of physician training in Latin America to include smoking cessation counselling techniques and use of pharmacological treatments may be an important component of a national tobacco control program.

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Table 1

Demographic and clinical profiles of 254 physicians participating in smoking cessation intervention, Argentina, 2010

	All Physicians *n* (%)	Primary Care Physicians *n* (%)	Gynaecologists *n* (%)
Participants	254 (100)	181 (71.3)	73 (28.7)
Gender			
Women	133 (52.4)	100 (55.3)	33 (45.2)
Men	121 (47.6)	81 (44.8)	40 (54.8)
Mean age in years	44.5 (28–72)	43.7 (28–72)	46.6 (28–70)
Age (years)			
Younger than 40	92 (36.7)	67 (37.2)	25 (35.2)
40 to 54	120 (47.8)	92 (51.1)	28 (39.4)
55 or older	39 (15.5)	21 (11.7)	18 (25.4)
Mean years from medical school graduation (range)	18.6 (1–49)	17.4 (4–49)	21.5 (1–47)
Years Since Graduation			
Less than 10	47(18.7)	34 (18.9)	13 (18.1)
10 to 19	100 (39.7)	80 (44.4)	20 (27.8)
20 or more	105 (41.7)	66 (36.7)	39 (54.2)
Clinical Sites			
Hospital Italiano	108 (42.5)	73 (40.3)	35 (47.9)
Hospital Aleman	24 (9.5)	11 (6.1)	13 (17.8)
Medicus Group	26 (10.2)	178 (9.4)	9 (12.3)
CEMIC system	18 (7.1)	11 (6.1)	7 (9.6)
La Plata public health clinics	48 (18.9)	39 (21.5)	9 (18.8)
Olavarria clinics	30 (11.8)	30 (16.6)	0 (0)
Smoking Status			
% Current smokers	30 (11.8)	23 (12.7)	7 (9.6)
% Former smokers	91(35.8)	59 (32.6)	32 (43.8)
% Never smokers	133 (52.4)	99 (54.7)	34 (46.6)
Perceived Quality of Smoking Cessation Training Received			
Poor, very poor, or none	89 (35.7)	37 (20.8)	52 (73.2)
Fair	56 (22.5)	44 (24.7)	12 (16.9)
Very good or good	104 (41.8)	97 (54.5)	7 (9.9)
Limited Time is a Barrier to Counselling			
Totally agree or agree	164 (68.9)	108 (63.9)	56 (81.2)
Disagree or totally disagree	74 (31.1)	61 (36.1)	13 (18.8)
Lack of Training is a Barrier to Counselling			
Totally agree or agree	170 (68.3)	102 (58)	68 (93.2)
Disagree or totally disagree	79 (31.7)	74 (42)	5 (6.9)

Table 2

Number and percent of physician reported smoking cessation practices by predictor categories among 254 physicians, Argentina, 2010

Total N (%) Yes	Ask about Smoking 216 (85%)		Advice to Quit 240 (94.4%)		Motivate to Quit 100 (39.5%)		Assist to Quit 98 (38.5%)		Prescribed Drugs 97 (38.3%)		Follow-Up visit/call 89 (35.1)%	
Predictor Category	N (%)	P	N (%)	P	N (%)	P	N (%)	P	N (%)	P	N (%)	P
Age (years):												
<40	83 (90.2)		87 (94.6)		34 (37)		35 (38)		40 (43.5)		39 (42.4)	
40–54	96 (80)	0.1	114 (95)	0.8	55 (46.2)	0.1	55 (45.8)	0.018	51 (42.9)	0.005	48 (40.3)	<0.001
55	34 (87.2)		36 (92.3)		10 (25.6)		8 (20.5)		6 (15.4)		2 (5.1)	
Gender:												
Women	117 (88)	0.2	126 (94.7)	0.9	51 (38.6)	0.8	59 (44.4)	0.047	47 (35.6)	0.4	49 (37.1)	0.5
Men	99 (81.8)		114 (94.2)		49 (40.5)		39 (32.2)		50 (41.3)		40 (33.1)	
Training Quality:												
Very poor/poor/none	70 (78.7)		78 (87.6)		14 (15.7)		10 (11.2)		8 (9.1)		5 (5.6)	
Fair	45 (80.4)	0.009	54 (96.4)	<0.001	19 (33.9)	<0.001	14 (25)	<0.001	16 (28.6)	<0.001	15 (26.8)	<0.001
Very good/good	97 (93.3)		104 (100)		66 (63.5)		74 (71.2)		73 (70.2)		69 (66.4)	
Current smoker	27 (90)	0.4	213 (95.1)	0.3	88 (39.5)	0.9	90 (40.2)	0.2	86 (38.6)	0.8	81 (36.3)	0.3
Non-smoker	189 (84.4)		27 (90)		12 (40)		8 (26.7)		11 (36.7)		8 (26.7)	
Limited Time Barrier												
Agree	138 (84.2)	0.5	156 (95.1)	0.8	64 (39.0)	0.3	55 (33.5)	0.003	57 (34.8)	0.012	48 (29.3)	<0.001
Disagree	65 (87.8)		71 (95.6)		34 (46.0)		40 (54.1)		38 (52.1)		40 (54.1)	
Physician Specialty												
Gynaecologist	62 (84.9)	0.9	65 (89.0)	0.016	13 (17.8)	<0.001	6 (8.2)	<0.001	0	<0.001	2 (2.7)	<0.001
Primary care	154 (85.1)		175 (96.7)		87 (48.3)		92 (50.8)		97 (53.9)		87 (48.3)	

For each predictor category the number (N) and percent responding yes to each of the outcomes by defined category are listed. Numbers may not correspond exactly because of missing responses.

Smoking cessation practices are defined: (1) ask about smoking and record in the chart; (2) advise to quit, to reduce number of cigarettes or to set a quit date; (3) motivate to quit smoking responding yes to 4 items; (4) assist the patient in quitting by providing at least two components (printed materials, website address, telephone quit line, advice on managing withdrawal symptoms, advice on weight gain, individual cognitive therapy, or behavioural therapy; (5) prescribe medications and specify one of the medications as nicotine replacement therapy, bupropion, or varenicline; and (6) follow-up visit or telephone call.

Table 3

Predictors of using six components of smoking cessation intervention by 254 physicians, Argentina, 2010[1]

Outcomes[2] Predictor	Ask about Smoking OR (IC 95)	P	Advise to Quit OR (IC 95)	P	Motivate to Quit OR (IC 95)	P	Assist to Quit OR (IC 95)	P	Prescribe Medications OR (IC 95)	P	Follow up visit/ Telephone Call OR (IC 95)	P
Age (ref <40 years)												
Age: 40–54	0.42 (0.18–1.01)	0.05	1.44 (0.35–5.93)	0.61	1.52 (0.81–2.88)	0.20	1.40 (0.69–2.84)	0.35	0.66 (0.31–1.40)	0.28	0.65 (0.32–1.35)	0.25
Age: ≥ 55	1.01 (0.27–3.76)	0.99	1.69 (0.26–10.8)	0.58	1.51 (0.54–4.22)	0.43	1.34 (0.40–4.49)	0.63	0.35 (0.09–1.47)	0.15	**0.15 (0.03–0.87)**	**0.03**
Gender (Ref: Men)												
Women	1.36 (0.62–2.98)	0.44	1.13 (0.29–4.45)	0.87	0.67 (0.36–1.24)	0.20	1.35 (0.69–2.65)	0.38	**0.36 (0.17–0.77)**	**0.008**	0.60 (0.29–1.23)	0.17
Perceived Quality of Training (Ref: Very poor/poor/none)												
Fair	1.40 (0.56–3.55)	0.47	2.60 (0.48–14.2)	0.27	2.1 (0.89–5.16)	0.09	1.41 (0.52–3.85)	0.50	1.60 (0.54–4.69)	0.39	3.05 (0.94–9.88)	0.06
Very good/good	**6.45 (2.18–19.10)**	**0.001**	Non-estimable[3]		**7.90 (3.36–18.5)**	**<0.001**	**9.87 (4.03–24.20)**	**<0.001**	**9.63 (3.47–26.70)**	**<0.001**	**13.0 (4.40–38.50)**	**<0.001**
Smoking behaviour (Ref: Never/past smoker):												
Current smoker	1.87 (0.50–7.04)	0.35	0.36 (0.08–1.65)	0.19	1.56 (0.60–4.01)	0.36	0.59 (0.20–1.80)	0.36	1.45 (0.49–4.25)	0.50	0.85 (0.28–2.62)	0.78
Time as Barrier (Ref: Agree)												
Disagree	1.07 (0.44–2.62)	0.87	0.73 (0.16–3.28)	0.68	0.79 (0.41–1.52)	0.48	1.30 (0.64–2.62)	0.47	1.24 (0.58–2.63)	0.58	**2.19 (1.05–4.58)**	**0.04**
Physician Specialty (Ref: Gynaecologist)												
Primary care MD	0.49 (0.19–1.24)	0.13	1.95 (0.47–8.18)	0.36	2.06 (0.91–4.69)	0.08	**4.85 (1.75–13.40)**	**0.002**	Non-estimable[3]		**12.7 (2.77–58.30)**	**<0.001**

[1] All models were adjusted for physician age, gender (men/women), self-perception of tobacco training (very good/good, fair, poor/very poor/no training), smoking behaviour of physician (current smoker, never/past smoker), perception of time as a barrier to counselling, and physician specialty.

[2] Smoking cessation practices are defined: (1) ask about smoking and record in the chart; (2) advise to quit, to reduce number of cigarettes or to set a quit date; (3) motivate to quit smoking responding yes to 4 items; (4) assist the patient in quitting by providing at least two components (printed materials, website address, telephone quit line, advice on managing withdrawal symptoms, advice on weight gain, individual cognitive therapy, or behavioural therapy; (5) prescribe medications and specify one of the medications as nicotine replacement therapy, bupropion, or varenicline; and (6) follow-up visit or telephone call.

[3] Among physicians reporting good/very good training there was zero variation on the advise outcome as all responded that they provided advise to quit. Similarly, among obstetrician/gynaecologists there was zero variation on the 'prescribe medication' outcome as no one prescribed medications for cessation. Therefore, the two corresponding parameters are inestimable and the X variable was thus excluded from the model of that particular outcome because one X-variable category had zero response variation on the corresponding outcome.