

# Smoking cessation knowledge and perceptions of cancer care providers at six Latin American cancer institutions

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## ABSTRACT

**Objective.** To assess the characteristics, self-reported tobacco use, knowledge, and perceptions about smoking cessation among cancer care providers (CCPs), as well as perceived barriers to inform interventions that can potentially improve quitting rates and the prognosis of cancer patients in Latin America.

**Methods.** A cross-sectional study was conducted among 996 CCPs in six cancer institutions located in Argentina, Brazil, Colombia, Mexico, and Peru. An online survey consisting of 28 close-ended questions adapted from the 2012 International Association for the Study of Lung Cancer survey and the Global Adult Tobacco Survey was administered.

**Results.** The majority of CCPs, ranging from 86.1% in Mexico to 95.9% in Brazil, agreed or strongly agreed that smoking cessation should be integrated into cancer treatment. However, inadequate training on smoking cessation was reported by 66.9%, 69.4%, 70.4%, 72.9%, 85.8%, and 86.4% in Mexico, Colombia (Floridablanca), Argentina, Peru, Brazil, and Colombia (Medellín), respectively, and this difference was statistically significant ( $p < 0.001$ ). Moreover, current cigarette smoking prevalence among CCPs was 2.5% in Brazil, 4.6% in Peru, 6.3% in Colombia (Floridablanca), 10.4% in Colombia (Medellín), 11.5% in Mexico, and 15.1% in Argentina, showing a statistically significant difference ( $p < 0.001$ ).

**Conclusions.** Efforts in Latin America should be geared toward assisting CCPs with their quitting efforts and training in smoking cessation practices aimed at achieving a better prognosis and improving cancer patients' quality of life.

## Keywords

Cigarette smoking; smoking cessation; oncology service, hospital; health personnel; Latin America.

Compared to most of the cancer hospitals in North America, cancer centers in Latin America often lack a comprehensive approach and are more focused on diagnosis and treatment with less attention to interventions that improve the quality of life of cancer patients and survivors (1). The epidemiologic transition occurring in Latin American countries has caused an increase in the prevalence of noncommunicable diseases, including cancer (2). The burden of cancer in the region will continue to rise, with cases projected to increase

by 40% by 2030 (3). Currently, Latin America is responsible for 20.9% of the total new cancer cases worldwide, and 14.2% of cancer deaths occurred in Latin America (4, 5). Although tobacco control policies are being implemented in the region, tobacco smoking remains a prominent risk factor for death and disability (6). Annually, an estimated \$34 billion in direct medical costs account for smoking-related health expenditure, representing a significant portion of Latin American health budgets (7).

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According to the 2019 World Health Organization (WHO) Report on the Global Tobacco Epidemic, the current cigarette smoking prevalence rates among those aged 15 and older are 19.8%, 12.2%, 7.3%, 13.1%, and 9.3% for Argentina, Brazil, Colombia, Mexico, and Peru, respectively (8). The smoking rates are higher among men than women, at 25.2%, 15.7%, 11.2%, 20.1%, and 15.2% for Argentina, Brazil, Colombia, Mexico, and Peru, respectively (8). Among these selected countries, the current cigarette smoking rate for women is highest in Argentina, with a prevalence of 14.4% (8). Sustained reduction in smoking prevalence will be stalled if tobacco prevention and control strategies are not continuously enforced and implemented (8).

Reports from the United States of America indicate many patients continue smoking after a cancer diagnosis despite the link between smoking and poorer treatment outcomes and likewise increased risk of cancer recurrence (9). Research has also shown smoking behaviors of physicians may hinder the initiation and effectiveness of smoking cessation interventions targeting their patients (10). Findings from a meta-analysis of 229 studies from 63 countries (including studies from Argentina, Brazil, Chile, Colombia, Ecuador, Mexico, Peru, Uruguay, and Venezuela) yielded a 21.0% prevalence of tobacco use among 457 145 health care workers (11). The analysis of an online study conducted in 2013 among 1 507 members of the International Association for the Study of Lung Cancer (IASLC), including 90 members from Latin America, showed that 5.3% and 24.1% were current and former smokers, respectively (12). A pilot cross-sectional study conducted in 2015 and 2016 by our research team revealed that 10.5% of Colombian and 12.3% of Mexican cancer care providers (CCPs) were current smokers (13).

A Cochrane review of trials provided evidence that brief advice from physicians has a positive effect on cessation rates, which can be amplified if numerous physicians engage in the practice (14). However, physicians' smoking behavior hurts messaging about the importance of quitting smoking (15, 16).

Seeking care for treatment after a cancer diagnosis presents a unique opportunity for CCPs to counsel and teach patients about smoking cessation, because patients are usually more interested and highly motivated to achieve recovery (17). Although Brazil has implemented several effective tobacco control policies, many Latin American nations still face a high burden of death and disease attributable to tobacco use (18). Also, many cancer centers have not fully imbibed smoking cessation services as part of the framework of cancer care (19). The failure of cancer patients to discontinue smoking after diagnosis stems from nonexistent or inadequate information about the advantages of quitting smoking. This is also amplified by the limited ability of health care professionals to provide evidence-based cessation services in oncology settings due to the lack of proper training. The deficiency of smoking cessation training tailored explicitly to CCPs cannot continue to be ignored to the detriment of patients who need to benefit from this type of intervention (20).

Therefore, the study objective was to expand the reach of our previous research effort in two cancer centers in Colombia and Mexico and assess CCPs' characteristics, self-reported tobacco use, knowledge and perceptions about smoking cessation, as well as barriers preventing the implementation of such services, in four additional cancer institutions in Latin America.

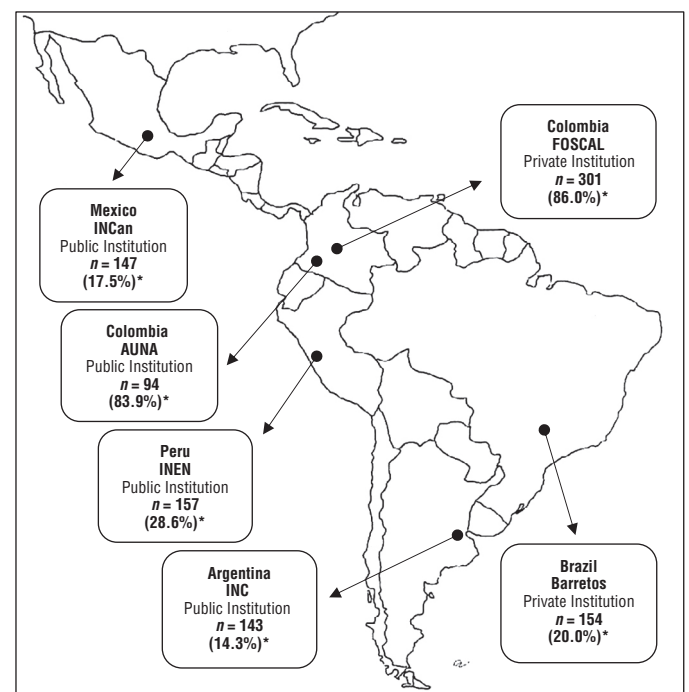
## MATERIALS AND METHODS

### Study design and settings

A cross-sectional study was conducted among CCPs recruited from six cancer institutions in five Latin American countries (Figure 1): Cancer Institute Las Americas–AUNA in Medellín, Colombia (AUNA-COL); Barretos Cancer Hospital in Barretos, Brazil (Barretos-BRA); FOSCAL Cancer Center in Floridablanca, Colombia (FOSCAL-COL); the National Cancer Institute in Buenos Aires, Argentina (INC-ARG); the National Cancer Institute in Mexico City, Mexico (INCan-MEX); and the National Institute of Neoplastic Diseases in Lima, Peru (INEN-PER).

Barretos-BRA is a non-profit referral oncological hospital in Barretos, Brazil, providing cancer prevention, diagnosis, and treatment services to rural and underserved populations in Brazil. Approximately 4 000 patient visits are registered at this cancer hospital daily, with more than 10 000 new cancer diagnoses each year (21). AUNA-COL is a reputable private hospital located in Medellín, Colombia. It provides cancer diagnosis and treatment to patients from all regions of the country. At the time of the study in 2015, AUNA-COL had a total of 76 536 physician consultations and 1 022 admissions. FOSCAL-COL, a non-governmental entity, aims to provide comprehensive care for patients with cancer in Colombia using advanced technology coupled with specialized medical and paramedical personnel. In 2018, FOSCAL-COL had a total of 21 875 physician consultations and 2 400 admissions. INCan-MEX is a public research institution focused on the prevention, early detection, diagnosis, and treatment of cancer in Mexico. In 2016, INCan-MEX had 221 235 physician consultations and admitted 7 208 patients.

**FIGURE 1. Location of the six Latin American cancer institutions**



Note: \* Survey response rate.  
Source: Prepared by the authors.

INEN-PER is a prestigious public institution committed to cancer research in Peru with a mission to protect, promote, and ensure the provision of cancer patient care, especially among persons with limited economic resources. The institution, overseen by the Ministry of Health of Peru, had a total of 358 662 physician consultations and 68 252 admissions in 2017. The INC-ARG is an establishment of the Ministry of Health of Argentina, in charge of leading efforts in cancer research, education, and training in coordination with cancer hospitals and the oncology settings in this country. INC-ARG has a large national network of approximately 1 200 clinical oncologists appointed at cancer centers, academic institutions, community oncology practices, and scientific societies devoted to cancer patient care, research, and education in Argentina.

## Recruitment

An anonymous Qualtrics questionnaire was used to obtain responses from a convenience sample of CCPs. Qualtrics is a cloud-based platform for creating and distributing secure web-based surveys. Eligibility criteria included being at least 18 years of age and being appointed as a health care professional providing direct care to cancer patients in the collaborating institutions. CCPs were invited to participate in the study through an email containing a link to the online questionnaire. Survey reminder emails were delivered to increase the response rates. The survey was conducted at different time points (AUNA-COL, September–December 2015; INCAN-MEX, April–July 2016; INEN-PER, April–May 2018; FOSCAL-COL, July–August 2018; INC-ARG, March–June 2019; Barretos-BRA, April–July 2019).

## Data collection

The online questionnaire comprised 28 close-ended questions such as age, gender, educational status, academic degree, years since graduation, and proportion of time in patient care. Psychosocial, behavioral, and tobacco-related data were also obtained from the CCPs participating in the study. The prevalence of current cigarette smoking was derived from those who reported smoking 100 cigarettes in their lifetime and who were smoking either daily or some days at the time of taking the survey. Former smokers were those CCPs who reported smoking at least 100 cigarettes in their lifetime but who had quit smoking at the time of completing the survey. Never smokers were those study participants who had never smoked or reported smoking less than 100 cigarettes in their lifetime. In addition, the prevalence of use of other tobacco products such as cigars, pipes, water pipes, and chewing tobacco, among others, was determined. The use of electronic cigarettes and exposure to secondhand smoke among CCPs was elicited with separate questions.

Knowledge and perceptions of CCPs about tobacco use and tobacco cessation was gauged using six statements measured on a 5-point Likert scale ranging from “completely disagree” to “strongly agree”: (1) Tobacco is the main risk factor for lung cancer; (2) Tobacco negatively impacts cancer treatment and survivorship; (3) Smoking cessation should be part of cancer treatment; (4) I have adequate smoking cessation training; (5) Health care providers should be aware of new and emerging tobacco products; and (6) Health care providers should not smoke. Detailed methods are fully described in a previous publication (13).

## Statistical analysis

Collected data were transferred from the Qualtrics platform to Stata 15.1 (StataCorp, College Station, Texas, USA) for analysis. Descriptive statistics (means, standard deviation, frequency, and proportions) were used to present the baseline characteristics of participants. Analysis of variance (ANOVA) was done to test differences in the continuous variable (age) across cancer institutions. Categorical variables were compared across cancer institutions using chi-square and Fisher’s exact tests when appropriate. The 5-point Likert scale responses were analyzed by combining “completely disagree,” “disagree,” or “no opinion” into a single category and “agree” or “strongly agree” into another group. The level of significance was set at 0.05.

## Ethical approval

This study was approved by the Ethics Boards of AUNA-COL (Protocol Number: 02-2015-I); Barretos-BRA (Protocol Number: 4.190.037); FOSCAL-COL (Protocol Number: Acta #045 on 12/01/2017); INC-ARG (Protocol Number: IF2019-20486HB); INCAN-MEX (Protocol Number: 016/001/DII; CEI/994/16); INEN-PER (Protocol Number: 16-54); The University of Texas Anderson Cancer Center (Protocol Number: PA14-1060); and The University of Texas Health Science Center at Houston (Protocol Number: HSC-SPH-20-1339). In addition, data were collected anonymously through an online survey and no personal identifying information was obtained from the study participants.

## RESULTS

The baseline characteristics of the CCPs in the six Latin American cancer centers are presented in Table 1. A total of 996 CCPs responded to the survey, of which 9.4% were appointed at AUNA-COL; 14.8% at INCAN-MEX; 30.1% at FOSCAL-COL; 14.4% at INC-ARG; 15.5% at Barretos-BRA; and 15.7% at INEN-PER. The survey responses of CCPs with missing data were 10.9%, 10.1%, 13.3%, 8.9%, and 5.4% in INCAN-MEX, FOSCAL-COL, INC-ARG, Barretos-BRA, and INEN-PER, respectively. The average age of survey respondents was 33 years ( $\pm 5.4$ ). Overall, most (63.2%) of the CCPs were women, with proportions ranging from 58.4% in Barretos-BRA to 70.6% in INC-ARG. More than half of all the respondents (58.6%) had a medical degree, with most of the CCPs in INC-ARG (93%) possessing a medical degree compared with 46.8% of the CCPs at AUNA-COL, thus showing a significant difference ( $p < 0.001$ ). Almost three-quarters of all the CCPs (74.5%) were 10 years or less since graduation, ranging from 55.9% in AUNA-COL to 85.2% in INEN-PER ( $p < 0.001$ ). Across institutions, 66.9% of all CCPs reported engaging in cancer patient care for more than half of their service time. These proportions ranged from 47.7% in FOSCAL-COL to 80.9% in AUNA-COL, and the difference was statistically significant ( $p < 0.001$ ).

The prevalence of self-reported tobacco use and exposure to secondhand smoke among CCPs is presented in Table 2. Overall, current smoking prevalence was 7.8%, ranging from 2.5% in Barretos-BRA to 15.1% in INC-ARG, and the difference across the institutions was statistically significant ( $p < 0.001$ ). The overall prevalence of former cigarette smoking was 26.6%. The proportions of CCPs who reported being former

TABLE 1. Characteristics of cancer care providers by institution

Characteristic	Total n = 996*	AUNA-COL n = 94*	INCan-MEX n = 147*	FOSCAL-COL n = 301*	INC-ARG n = 143*	Barretos-BRA n = 154*	INEN-PER n = 157*	p
Age (SD)	32.5 (5.4)	40.5 (10.9)	36.9 (9.8)	30.8 (9.2)	32.4 (9.7)	27.5 (7.1)	26.6 (7.8)	<0.001 <sup>a</sup>
<b>Sex</b>								
Female	629 (63.2%)	55 (58.5%)	97 (66.0%)	190 (63.1%)	101 (70.6%)	90 (58.4%)	96 (61.1%)	0.256 <sup>b</sup>
Male	367 (36.8%)	39 (41.5%)	50 (34.0%)	111 (36.9%)	42 (29.4%)	64 (41.6%)	61 (38.9%)	
<b>Degree</b>								
Medicine	573 (58.6%)	44 (46.8%)	82 (55.8%)	143 (47.5%)	133 (93.0%)	79 (51.3%)	92 (58.6%)	<0.001 <sup>c</sup>
Nursing	218 (21.9%)	24 (25.5%)	34 (23.1%)	79 (26.2%)	2 (1.4%)	20 (13.0%)	59 (37.6%)	
Other	205 (27.7%)	26 (27.7%)	31 (21.1%)	79 (26.2%)	8 (5.6%)	55 (35.7%)	6 (3.8%)	
<b>Graduation</b>								
≤10 years	740 (74.5%)	52 (55.9%)	114 (77.6%)	215 (71.4%)	97 (67.8%)	130 (84.4%)	132 (85.2%)	<0.001 <sup>b</sup>
>10 years	253 (25.5%)	41 (44.1%)	33 (22.4%)	86 (28.6%)	46 (32.2%)	24 (15.6%)	23 (14.8%)	
<b>Time with patients</b>								
<50%	292 (33.0%)	18 (19.1%)	52 (36.6%)	104 (52.3%)	35 (24.6%)	52 (34.4%)	31 (19.9%)	<0.001 <sup>b</sup>
≥50%	592 (66.9%)	76 (80.9%)	90 (65.2%)	95 (47.7%)	107 (75.4%)	99 (65.6%)	125 (80.1%)	

Notes: AUNA-COL, Cancer Institute Las Americas–AUNA, Medellín, Colombia; Barretos-BRA, Barretos Cancer Hospital, Barretos, Brazil; FOSCAL-COL, FOSCAL Cancer Center, Floridablanca, Colombia; INC-ARG, National Cancer Institute, Buenos Aires, Argentina; INCan-MEX, National Cancer Institute, Mexico City, Mexico; INEN-PER, National Institute of Neoplastic Diseases, Lima, Peru.

\* Missing data, not all the variables add to the total.

<sup>a</sup> Analysis of variance (ANOVA) test.

<sup>b</sup> Chi-square test.

<sup>c</sup> Fisher's exact test.

Source: Prepared by the authors from the study data.

TABLE 2. Tobacco use and secondhand-smoke exposure among cancer care providers

Characteristic	Total n = 996*	AUNA-COL n = 94*	INCan-MEX n = 144*	FOSCAL-COL n = 301*	INC-ARG n = 143*	Barretos-BRA n = 154*	INEN-PER n = 157*	p
<b>Smoking status</b>								
Current smoker	64 (7.8%)	7 (10.4%)	15 (11.5%)	17 (6.3%)	16 (15.1%)	3 (2.5%)	6 (4.6%)	<0.001 <sup>a</sup>
Former smoker	219 (26.6%)	15 (22.4%)	46 (35.4%)	58 (21.6%)	33 (31.1%)	23 (18.9%)	44 (33.6%)	
Never smoker	541 (65.7%)	45 (67.2%)	69 (53.1%)	193 (72.0%)	57 (58.3%)	96 (78.7%)	81 (61.8%)	
<b>Other tobacco product</b>								
Current user	14 (5.8%)	1 (8.3%)	3 (9.4%)	4 (5.5%)	5 (10.2%)	0 (0.0%)	1 (2.0%)	0.105 <sup>a</sup>
Former user	53 (21.9%)	4 (33.3%)	8 (25.0%)	14 (19.2%)	9 (18.4%)	11 (42.3%)	7 (14.0%)	
Never user	175 (72.3%)	7 (58.3%)	21 (65.6%)	55 (75.3%)	35 (71.4%)	15 (57.7%)	42 (84.0%)	
<b>e-Cigarette</b>								
Current user	10 (1.4%)	2 (3.5%)	4 (3.8%)	1 (0.5%)	1 (1.0%)	0 (0.0%)	2 (2.2%)	0.152 <sup>a</sup>
Former user	56 (8.1%)	3 (5.2%)	6 (5.8%)	19 (8.7%)	9 (8.6%)	14 (12.5%)	5 (5.4%)	
Never user	625 (90.4%)	53 (91.4%)	94 (90.4%)	199 (90.9%)	95 (90.5%)	98 (87.5%)	86 (92.5%)	
<b>Secondhand smoke at work</b>								
Yes	53 (6.5%)	0 (0.0%)	9 (6.9%)	6 (2.3%)	27 (25.5%)	4 (3.3%)	7 (5.5%)	<0.001 <sup>a</sup>
No	759 (93.5%)	63 (100.0%)	121 (93.1%)	260 (97.7%)	79 (74.5%)	116 (96.7%)	120 (94.5%)	

Notes: AUNA-COL, Cancer Institute Las Americas–AUNA, Medellín, Colombia; Barretos-BRA, Barretos Cancer Hospital, Barretos, Brazil; FOSCAL-COL, FOSCAL Cancer Center, Floridablanca, Colombia; INC-ARG, National Cancer Institute, Buenos Aires, Argentina; INCan-MEX, National Cancer Institute, Mexico City, Mexico; INEN-PER, National Institute of Neoplastic Diseases, Lima, Peru.

\* Missing data; not all the variables add to the total.

<sup>a</sup> Fisher's exact test.

Source: Prepared by the authors from the study data.

smokers ranged from 18.9% in Barretos-BRA to 35.4% in INCan-MEX. Among all CCPs participating in the study, the current use of other tobacco products was 5.8%. Current and former use of e-cigarettes among all CCPs who responded was 1.4% and 8.1%, respectively, with former e-cigarette use ranging between 5.2% in AUNA-COL and 12.5% in Barretos-BRA. Secondhand exposure to smoking at work was reported by 6.5% of all CCPs, and INC-ARG had the highest proportion of CCPs (25.5%) reporting secondhand smoke exposure at work. A statistically significant difference was observed in the

exposure to secondhand smoke at work across the institutions ( $p < 0.001$ ).

The respondents' knowledge and perceptions of CCPs about tobacco use and tobacco cessation are presented in Table 3. Overall, the vast majority of the CCPs (88.6%) agreed or strongly agreed that tobacco use is the major cause of lung cancer, ranging from 86.4% in AUNA-COL to 92.6% in INC-ARG. Among all CCPs, 90.4% believed that tobacco use had a negative impact on cancer treatment and survivorship, with proportions ranging from 85.8% in INEN-PER to 96.7% in



TABLE 3. Cancer care providers' knowledge and perceptions of tobacco use and cessation

Variables	Total n = 996*	AUNA-COL n = 94*	INCan-MEX n = 147*	FOSCAL-COL n = 301*	INC-ARG n = 143*	Barretos-BRA n = 154*	INEN-PER n = 157*	p
<b>Tobacco as main risk factor for lung cancer</b>								
Completely disagree/Disagree/ No opinion	94 (11.4%)	9 (13.6%)	12 (9.2%)	37 (13.6%)	8 (7.4%)	10 (8.4%)	18 (13.5%)	0.345 <sup>a</sup>
Agree/Strongly agree	734 (88.6%)	57 (86.4%)	118 (90.8%)	235 (86.4%)	100 (92.6%)	109 (91.6%)	115 (86.5%)	
<b>Tobacco negatively impacts treatment and survivorship</b>								
Completely disagree/Disagree/ No opinion	80 (9.6%)	6 (9.1%)	12 (9.2%)	32 (11.8%)	7 (6.5%)	4 (3.3%)	19 (14.2%)	<b>0.029<sup>b</sup></b>
Agree/Strongly agree	753 (90.4%)	60 (90.9%)	119 (90.8%)	240 (88.5%)	101 (93.5%)	118 (96.7%)	115 (85.8%)	
<b>Cessation should be part of treatment</b>								
Completely disagree/Disagree/No opinion	81 (9.7%)	9 (13.9%)	12 (9.2%)	30 (11.0%)	9 (8.3%)	5 (4.1%)	16 (12.0%)	0.157 <sup>a</sup>
Agree/Strongly agree	750 (90.3%)	56 (86.1%)	119 (90.8%)	242 (89.0%)	99 (91.7%)	117 (95.9%)	117 (88.0%)	
<b>Adequate smoking cessation training</b>								
Completely disagree/Disagree/No opinion	608 (73.4%)	57 (86.4%)	87 (66.9%)	188 (69.4%)	76 (70.4%)	103 (85.8%)	97 (72.9%)	<b>&lt;0.001<sup>a</sup></b>
Agree/Strongly agree	220 (26.6%)	9 (13.6%)	43 (33.1%)	83 (30.6%)	32 (29.6%)	17 (14.2%)	36 (27.1%)	
<b>Providers should not smoke</b>								
Completely disagree/Disagree/No opinion	125 (15.1%)	13 (19.7%)	21 (16.2%)	49 (18.1%)	17 (15.7%)	9 (7.4%)	16 (12.1%)	0.088 <sup>a</sup>
Agree/Strongly agree	703 (84.9%)	53 (80.3%)	109 (83.8%)	222 (81.9%)	91 (84.3%)	112 (92.6%)	116 (87.9%)	

**Notes:** AUNA-COL, Cancer Institute Las Americas–AUNA, Medellín, Colombia; Barretos-BRA, Barretos Cancer Hospital, Barretos, Brazil; FOSCAL-COL, FOSCAL Cancer Center, Floridablanca, Colombia; INC-ARG, National Cancer Institute, Buenos Aires, Argentina; INCan-MEX, National Cancer Institute, Mexico City, Mexico; INEN-PER, National Institute of Neoplastic Diseases, Lima, Peru.

\* Missing data; not all the variables add to the total.

<sup>a</sup> Chi-square test.

<sup>b</sup> Fisher's exact test.

**Source:** Prepared by the authors from the study data.

Barretos-BRA, with a statistically significant difference across institutions ( $p = 0.029$ ). Also, 90.3% of all the CCPs supported integrating smoking cessation into cancer treatment, ranging from 86.1% in AUNA-COL to 95.9% in Barretos-BRA. Almost three-quarters (73.4%) of all CCPs reported inadequate smoking cessation training, with proportions ranging from 66.9% in INCan-MEX to 86.4% in AUNA-COL, and this difference was statistically significant ( $p < 0.001$ ). The majority of CCPs participating in the study, ranging from 80.3% in AUNA-COL to 92.6% in Barretos-BRA, believed that health care providers should not smoke.

## DISCUSSION

We found the prevalence of current cigarette smoking to range between 2.5% in Barretos-BRA and 15.1% in INC-ARG. While these proportions were lower than the current smoking prevalence of those aged 15 years and older in the general population at the time the study was conducted (7.3% in Colombia, 9.3% in Peru, 12.4% in Brazil, 13.0% in Mexico, and 19.2% in Argentina) (22), the combination of former and current cigarette smoking prevalence rates among the CCPs were relatively high, ranging from 21.4% in Barretos-BRA to 46.9% in INCan-MEX. CCPs' smoking behavior may interfere with clinical efforts to reduce smoking among cancer patients, and some authors have suggested that health professionals should serve as role models of non-smoking behavior, ensuring credence is given to smoking cessation messaging intended for nicotine-dependent patients (15, 16). These results indicate that smoking behavior among CCPs is an important problem that should be addressed for effective implementation of evidence-based smoking cessation programs at these institutions (9, 12).

The prevalence of current and former e-cigarette use among all CCPs was 1.4% and 8.1%, respectively. Although this prevalence is generally low in Latin America, it can be expected that the use of e-cigarettes will increase in the region due to the misleading perception that these devices are less toxic and safer than conventional cigarettes. There is a lack of consensus in the research community concerning the effectiveness of e-cigarettes as a smoking cessation method, and research evaluating the safety profile of e-cigarettes shows mixed results (23). Therefore, trends in the use of e-cigarettes should be closely scrutinized, as the benefits and consequences of using these products are only in the nascent stage of knowledge. More studies are required to ensure that beneficial public health measures are implemented.

Alarming, a quarter of the INC-ARG CCPs participating in the study were exposed to secondhand smoking at their institutions. Despite participating countries having existing policies that prohibit smoking in public and workplaces, these laws are not always enforced rigorously (8). Strengthening the implementation of smoke-free hospital policies coupled with supporting quitting efforts of health care workers who smoke could potentially reduce smoking within hospitals.

Although the majority of CCPs believed that smoking is a major risk factor for lung cancer, there appear to be some perceived barriers to implementing smoking cessation services among cancer patients in these institutions. Approximately a tenth of CCPs from all participating cancer institutions, except those in Barretos-BRA, did not think smoking cessation should be part of cancer treatment. This notion has evolved in countries like the United States of America and Canada, where smoking cessation is now recognized as an integral component of cancer treatment, as evidence exists that it improves survivorship

and quality of life of cancer patients (20, 24). The Moonshot Initiative of the National Cancer Institute (NCI) in the United States, as an example, provided resources to expand in-house tobacco cessation treatment services for cancer patients at NCI-designated cancer centers (24). Remarkable progress has been made since implementing this initiative, with more cancer centers in the United States adding in-person counseling services, expanding cessation medication programs, employing tobacco treatment specialists, and integrating Electronic Health Records-based tobacco treatment referrals (24). However, implementing this model may not be feasible in Latin American institutions. Nevertheless, any method used must be tested locally for its applicability, and effectiveness, and should be culturally sensitive to ensure success.

Additional barriers to implementing smoking cessation services by CCPs include inadequate training on smoking cessation. About three-quarters (73.4%) of the CCPs surveyed in this study reported a lack of adequate training on smoking cessation. A previous study identified limitations to implementing smoking cessation treatment, such as lack of time during routine care, inadequate training of medical personnel, patient overload, and insufficient tobacco cessation resources (25). Formal smoking cessation educational programs in Latin America are limited and do not target cancer patients' and survivors' smoking behaviors (13). Challenges commonly encountered when offering smoking cessation interventions to cancer patients include high levels of mental health problems, multiple failed quit attempts, complex medication regimens, drug interactions, and side effects of treatment (26). Given the evidence that supports the effectiveness of smoking cessation interventions (14, 27), there should be an emphasis on standardizing and providing specific training on smoking cessation to CCPs in the context of cancer care. Such training should help build the knowledge and skills of CCPs to motivate cancer patients to quit smoking, and other interventions should address health system constraints by creating smoking cessation resources, reducing patient overload, providing referrals to tobacco treatment specialists, and embracing the use of specific pharmacotherapy options for smoking cessation during cancer treatment. It is worth noting that 15.1% of CCPs still believed health workers should smoke; therefore, this perception must be debunked to ensure the full cooperation of CCPs when implementing smoking cessation programs at these institutions.

This study has seven important limitations. First of all, the six institutions in which this study was conducted cannot possibly represent the situation of all CCPs in Latin America. The second limitation is that items related to CCPs' knowledge and perceptions about tobacco use and tobacco cessation in the online questionnaire were translated but not validated in Spanish due to the financial constraints during the conduct of this multicountry research effort. Third, data obtained from these institutions are not comparable, as both private and public cancer institutions were included in this study, each with varying policies, oversight bodies, and resources. Fourth, the results are mostly limited to the cross-sectional design and self-reported data, which are prone to bias. Fifth, due to missing data, not all the variables add up to the total sample, which has potential implications for the interpretation of the findings. Sixth, lower rates of current smoking reported by CCPs in our study may be explained by the underreporting of smoking behavior due to social desirability bias among

respondents. Finally, data collection procedures at the participating cancer institutions took place at different points in time, making the results time-period specific for each institution. Therefore, group comparisons should be interpreted with caution. Despite these limitations, our study is the first report assessing tobacco use (including e-cigarettes), knowledge, perceptions, and perceived barriers to providing smoking cessation services in a six-country sample of Latin American CCPs.

About 1.3 million new cancer cases were estimated for 2018 in Latin America and the Caribbean (4). In conclusion, given the significant impact of smoking on cancer prognosis and survival, educating Latin American CCPs to provide smoking cessation assistance to their patients or linking them to cessation services and/or resources will improve patients' overall quality of life and potentially reduce the cost of oncology treatment. Besides prioritizing the integration of smoking cessation into cancer treatment in Latin America, oncology settings in the region should assist CCPs who smoke with their quitting efforts. This has proved to increase their motivation to provide cessation support to their patients. These interventions and programs should also include reducing the exposure to and use of electronic cigarettes, as these new tobacco products are gaining popularity in the region, and the long-term side effects of vaping on cancer treatment are not well known. Finally, enforcing smoke-free policies in indoor spaces and designated public areas of Latin American health care facilities will promote the health and safety not only of their cancer patients and caregivers but also of the entire cancer care team and administrative staff appointed at those oncology settings.

**Author contributions.** ITM conceived the original idea, conceptualized the methodology, and supervised the data analysis. HG, IJ, JM, VV, CR, and LS led data collection. ITM curated the datasets. ITM, MO, HG, IJ, JM, VV, CR, and LS interpreted the results. All authors wrote the paper. All authors reviewed and approved the final version.

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## Conocimientos e impresiones acerca de dejar de fumar entre prestadores de atención a pacientes con cáncer de seis instituciones oncológicas de América Latina

### RESUMEN

**Objetivo.** Evaluar entre los prestadores de atención a pacientes con cáncer las características, el consumo de tabaco referido por la misma persona, sus conocimientos y sus impresiones acerca de dejar de fumar, así como los obstáculos percibidos, para sustentar las intervenciones que puedan mejorar las tasas de abandono del consumo y el pronóstico de los pacientes con cáncer en América Latina.

**Métodos.** Se realizó un estudio transversal con 996 prestadores de atención oncológica en seis instituciones oncológicas ubicadas en Argentina, Brasil, Colombia, México y Perú. Se realizó una encuesta en línea con 28 preguntas cerradas adaptadas de la encuesta de la Asociación Internacional para el Estudio del Cáncer de Pulmón del 2012 y la Encuesta Mundial de Tabaquismo en Adultos.

**Resultados.** La mayoría de los prestadores de atención oncológica, del 86,1% en México al 95,9% en Brasil, estuvieron de acuerdo o muy de acuerdo con que el abandono del tabaco debería integrarse en el tratamiento del cáncer. Sin embargo, 66,9%, 69,4%, 70,4%, 72,9%, 85,8% y 86,4% en México, Colombia (Floridablanca), Argentina, Perú, Brasil y Colombia (Medellín), respectivamente, dieron parte de una formación inadecuada en cuanto al abandono del tabaco, y esta diferencia fue estadísticamente significativa ( $p < 0,001$ ). Además, la prevalencia actual del consumo de tabaco entre los proveedores de atención oncológica fue de 2,5% en Brasil, 4,6% en Perú, 6,3% en Colombia (Floridablanca), 10,4% en Colombia (Medellín), 11,5% en México y 15,1% en Argentina, y mostró una diferencia estadísticamente significativa ( $p < 0,001$ ).

**Conclusiones.** En América Latina, deben canalizarse los esfuerzos para ayudar a los prestadores de atención oncológica a abandonar el consumo de tabaco y apoyarlos en la capacitación acerca de las prácticas de abandono del tabaco dirigidas a lograr un pronóstico más favorable y mejorar la calidad de vida de los pacientes con cáncer.

### Palabras clave

Fumar cigarrillos; cese del hábito de fumar; servicio de oncología en hospital; personal de salud; América Latina.

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## Conhecimento e percepções de profissionais de atenção oncológica sobre o abandono do tabagismo em seis instituições de oncologia da América Latina

### RESUMO

**Objetivo.** Avaliar as características, o uso autorrelatado de tabaco, o conhecimento e as percepções sobre o abandono do tabagismo entre os profissionais da área de oncologia (PAO), bem como as barreiras percebidas, a fim de guiar intervenções que possam melhorar as taxas de abandono e o prognóstico de pacientes com câncer na América Latina.

**Métodos.** Realizou-se um estudo transversal com 996 PAO em seis instituições de oncologia localizadas na Argentina, no Brasil, na Colômbia, no México e no Peru. Administrou-se uma pesquisa on-line com 28 perguntas fechadas, adaptadas do levantamento realizado em 2012 pela Associação Internacional para o Estudo do Câncer de Pulmão e do Global Adult Tobacco Survey (Levantamento Global do Tabagismo em Adultos).

**Resultados.** A maioria dos PAO, variando de 86,1% (no México) a 95,9% (no Brasil), concordou parcial ou totalmente com a necessidade de integrar o abandono do tabagismo ao tratamento do câncer. Entretanto, o treinamento inadequado sobre o abandono do tabagismo foi relatado por 66,9% no México, 69,4% na Colômbia (Floridablanca), 70,4% na Argentina, 72,9% no Peru, 85,8% no Brasil e 86,4% na Colômbia (Medellín), e essa diferença foi estatisticamente significativa ( $p < 0,001$ ). Além disso, a prevalência atual de consumo de cigarro entre os PAO foi de 2,5% no Brasil, 4,6% no Peru, 6,3% na Colômbia (Floridablanca), 10,4% na Colômbia (Medellín), 11,5% no México, e 15,1% na Argentina, mostrando uma diferença estatisticamente significativa ( $p < 0,001$ ).

**Conclusões.** Os esforços na América Latina devem ser direcionados para o auxílio aos PAO em seus esforços de abandonar o tabagismo e para o treinamento sobre métodos para abandono do tabagismo, com o objetivo de melhorar o prognóstico e a qualidade de vida dos pacientes com câncer.

### Palavras-chave

Fumar cigarros; abandono do hábito de fumar; serviço hospitalar de oncologia; pessoal de saúde; América Latina.

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