ORIGINAL ARTICLE

Investigation of Hong Kong Doctors' Current Knowledge, Beliefs, Attitudes, Confidence and Practices: Implications for the Treatment of Tobacco Dependency

Abu Saleh M. Abdullah[1,2]*, A.S.M. Mujibur Rahman[3], Chau Wai Suen[4], Lau Sun Wing[4], Lau Wai Ling[4], Li Yuen Mei[4], Lun Chung Tat[4], Mak Nin Tai[4], Tsai Nga Wing[4], Wu Tsz Yuen[4], Yam H. Kwan[1]

[1]Department of International Health, Boston University School of Public Health, Boston, USA, [2]Department of Community Medicine, University of Hong Kong, Hong Kong SAR, China, [3]Maimonides Medical Center, Brooklyn, New York, USA, and [4]Health Care Project Group-11 (2001–2002), Faculty of Medicine, University of Hong Kong, Hong Kong SAR, China.

Background: Physicians play a crucial role in promoting smoking cessation. However, there are lack of data on Chinese doctors' knowledge, beliefs, attitudes, confidence and usual practices in relation to smoking cessation. Understanding of these indicators is important in the design of any effective intervention program targeting doctors.

Methods: To assess Chinese doctors' knowledge, beliefs, attitudes, confidence and usual practices in relation to smoking cessation, a mailed questionnaire survey was conducted among 4,000 doctors registered with the Hong Kong Medical Association (HKMA) in 2002.

Results: Of the 757 respondents (18.9% response rate), 78% were male, 94% were non-smokers and 50% had received no basic training on smoking cessation. More than half of the doctors did not hold adequate knowledge (53%) or favorable attitudes (55%) towards smoking cessation; 44% were less confident in their smoking cessation skills. About 77% of the doctors obtained information on their patients' smoking status and recorded it in their medical record, and 29% advised all smoking patients to quit. Doctors who gave smoking cessation advice were more likely to be aged above 50 years, with more than 30 years' practice experience, working in the private sector, non- or ex-smokers, with more positive beliefs towards smoking cessation, and with higher confidence in smoking cessation skills ($p < 0.001$). Different factors associated with establishing and recording smoking status, arranging follow-up sessions, acquiring more knowledge and developing a more favorable attitude and greater confidence on smoking cessation-related matters were also identified.

Conclusion: The survey has shown that existing smoking cessation service provision in Hong Kong for patients who smoke is inadequate, and has identified a lack of smoking cessation skills among doctors. Action should be taken to train doctors in smoking cessation skills and encourage them to routinely establish the smoking status of their patients and to advise all smokers to quit smoking. [*J Chin Med Assoc* 2006;69(10):461–471]

Key Words: attitude, confidence, doctors, knowledge, smoking cessation

Introduction

Since the early 1960s, enormous efforts have been made to alert the general public to the dangers of smoking, yet it continues to be one of the most important public health problems of our time.[1,2] Smoking kills about 5,700 people in Hong Kong each year, accounting for about 1-fifth of all deaths.[3] There were about 800,000 smokers in Hong Kong in 2002, half of whom are likely to die of a smoking-related disease if preventive measures are not taken urgently.[4] There is good evidence that quitting smoking at any age results in significant health gains.[5,6] The interaction between a doctor and patient during a hospital visit offers a unique opportunity to

*Correspondence to: Dr Abu Saleh M. Abdullah, Department of International Health, Boston University School of Public Health, 715 Albany Street, T4W, Boston, MA 02118, USA.
E-mail: asma@bu.edu • Received: December 27, 2004 • Accepted: September 7, 2006

discuss smoking and health issues, and to offer quitting advice.[7,8] In the mid-1980s, the medical community recognized the advantages of quitting advice and the need to offer it to all smokers visiting hospitals or clinics.[9,10] The development of the United States (US) Smoking Cessation Clinical Practice Guideline in 1996[11] improved the provision of smoking cessation services in clinical settings, though primarily in developed countries (e.g. New Zealand,[12] United Kingdom,[13] USA[14]).

While progress has been made elsewhere, little research has been conducted on the smoking cessation practices of Hong Kong doctors. Surveys of patients and doctors elsewhere indicate that cessation advice is often not given frequently,[15] or only given to diseased patients.[16] Many doctors also lacked the appropriate skills and confidence in providing smoking cessation service.[17] A 2001 survey of 147 doctors in Norway[15] found that about 1-third of the doctors did not ask about their patients' smoking status if they did not have smoking-related symptoms, and 1-third of these doctors gave any smoking cessation advice. The study noted that the main barrier reported was lack of consultation time. In another survey of 311 general practitioners (GPs) in Australia,[17] few were reportedly confident about negotiating a quit date (21.5%) or using evidence-based smoking cessation techniques (19.3%), and 40% of the GPs suggested there was a need for skills training to improve practitioner effectiveness. Goldstein et al, based on a survey of 246 community-based primary care doctors in the US in 1998,[18] reported that 67% and 74% of the doctors asked about smoking and advised their patients to quit, respectively. However, rather fewer provided assistance in quitting (35%) or arranged follow-up (8%).

Although the US[7] and United Kingdom (UK)[19] clinical practice guidelines recommend that doctors advise every smoker to quit smoking, lack of knowledge and confidence and inappropriate attitudes could be a barrier.[17,20] As we have no data about the knowledge, belief, attitudes and confidence of Chinese doctors regarding smoking cessation in Hong Kong, such information would be useful in the development of responsive and multifaceted service guidelines for doctors. In this study, we examined Hong Kong doctors' knowledge, beliefs, attitudes, confidence and usual practices concerning smoking cessation activities.

Methods

Sample

All the doctors registered with the Hong Kong Medical Association (HKMA) were eligible for the survey, regardless of where they received their medical training (overseas or locally), and regardless of their age, gender and ethnicity. The HKMA has more than 5,000 members, and the self-administered questionnaires were mailed to 4,000 randomly selected (by computer program) registered members.

Procedure

A single-sheet double-sided questionnaire was delivered to all 4,000 selected registered members of the HKMA by post together with the Association Newsletter in May and September 2002. Completed questionnaires were returned to the Department of Community Medicine, The University of Hong Kong, by fax or by post. Postage was paid by the research office. The study was approved by the ethics committee of the Faculty of Medicine, The University of Hong Kong.

Survey instrument

A 51-item structured, self-administered questionnaire, written in English, was used. The questionnaire was pilot-tested with 50 doctors at the Queen Mary Hospital and appropriate amendments were made before finalization. The questionnaire included demographic information and questions on knowledge, beliefs, attitudes, confidence and usual practices. Subjects' knowledge on smoking cessation was assessed by asking 10 questions (Appendix). A scoring system was developed from these 10 questions, in which 1 point was assigned for each correct response or agree response and 0 for each incorrect or uncertain response or disagree response. Respondents scoring a mean score or above were categorized as having better knowledge and those scoring below the mean were categorized as having poor knowledge.

Beliefs on usual practices were assessed by asking 6 questions (Appendix). A 5-point Likert scale (strongly agree, agree, unsure, disagree, strongly disagree) was used to rate the responses. A simple Likert scoring system was adopted to generate a composite score: 5 for "strongly agree", 4 for "agree", 3 for "unsure", 2 for "disagree" and 1 for "strongly disagree". Respondents scoring a mean score or above were categorized as having "positive beliefs" and those scoring below the mean were categorized as having "negative beliefs".

Attitudes on smoking cessation practice and on the need for a Smoking Cessation Guideline in Hong Kong were assessed by asking 3 questions (Appendix). A scoring system using these 3 questions was used to generate a composite score. For the question relating to level of perceived preparation, a score of 2 was given for "very well prepared", 1 for "somewhat prepared" and 0 for "not at all prepared"; while for the questions

relating to the need for a guideline, a score of 2 was given for "yes", 1 for "do not know" and 0 for "no". Respondents scoring a mean score or above were categorized as holding "more favorable attitudes" and those scoring below the mean were categorized as holding "less favorable attitudes".

Confidence level in providing smoking cessation services was assessed by asking 7 questions (Appendix). A 5-point Likert scale (strongly agree, agree, unsure, disagree, strongly disagree) was used to rate the responses, and the Likert scoring system was adopted to generate a composite score: 5 for "strongly agree", 4 for "agree", 3 for "unsure", 2 for "disagree" and 1 for "strongly disagree". Respondents scoring a mean score or above were categorized as having "higher confidence" and those scoring below the mean were categorized as having "lower confidence".

Four "yes/no" forced choice format questions were asked to assess a doctor's *usual practice on smoking cessation*: (a) whether he asked about the smoking status of patients; (b) whether he recorded patients' smoking status in their medical records; (c) whether he offered smoking cessation advice; and (d) whether he arranged follow-up sessions for patients.

Statistical analysis

Data were analyzed using SPSS version 11.0 (SPSS Inc., Chicago, IL, USA) for Windows. The characteristics of the respondents and their usual practices on smoking cessation promotion were assessed in a descriptive manner. The χ^2 test was used to assess the relationships between dependent variables (e.g. knowledge, beliefs, attitudes, confidence and usual practices towards smoking cessation) and other independent variables. A p value < 0.05 (2-tailed) was considered statistically significant.

Results

Characteristics of respondents

Completed questionnaires were returned by 757 doctors, a response rate of 18.9%. Of the 757 respondents, 78.2% were male, 33.8% were aged 30 years or below, 54.3% had < 10 years' experience in the medical field, 64.5% worked in the public sector and 93.6% were non-smokers (Table 1). The demographic characteristics of the respondents were similar to those of the non-respondents (male, 78.2% *vs.* 77.5%; age > 40 years, 36.6% *vs.* 37.1%) (Table 1). Nearly half of the respondents had not received any training on smoking cessation, while 34.0% had received training from lectures, 8.2% through workshops, 2.3% through local training courses, 2.1% through overseas conferences, training or attachments, and 6% from other sources.

Factors associated with knowledge, beliefs, attitudes and confidence levels

The total score for knowledge ranged from 0 to 10, with a mean ± standard deviation (SD) of 6.1 ± 2.1. Based on the scoring criteria, 47% of respondents were categorized as having better knowledge. Table 2 shows that being aged 41–50 years, having practiced for 10–20 years and having received training on smoking cessation for at least 3 hours were significantly associated with better knowledge. The total score for beliefs ranged from 6 to 30, with a mean ± SD of 24.2 ± 2.9. Forty-six percent of the respondents held more positive beliefs on usual practices regarding smoking cessation. Table 2 shows that being aged 41–50, being female, having a longer duration of practice and working in private hospitals were significantly associated with positive belief.

The total score for attitudes ranged from 0 to 6, with a mean ± SD of 4.3 ± 1.3. Based on the scoring, 55% of respondents had more favorable attitudes towards smoking cessation. As shown in Table 2, being aged 30 or below, being female and being a current smoker were significantly associated with having more favorable attitudes towards smoking cessation.

The total score for confidence level ranged from 7 to 35, with a mean of 20.7. Fifty-six percent of the respondents were categorized as having more confidence in their skills to help patients to quit smoking. Being aged over 50, being male, having practiced for > 30 years, working in a university setting and having received training on smoking cessation for at least 3 hours were significantly associated with being more confident (Table 2).

Usual practices of tobacco control among doctors and associated factors

Although 77% of the respondents asked about smoking, and 78.2% recorded their patients' smoking status, only 29% advised all smoking patients to quit smoking, and only 20% of the respondents made any follow-up arrangements (Table 3). Of those who advised their patients to quit smoking, 74% used a brief counseling approach (Figure 1). Respondents reported several obstacles to providing smoking cessation advice: lack of patient motivation (82.8%), lack of doctor's time in consultation (69.1%), focus on other health measures of higher priority (39.4%), lack of expertise on smoking cessation (34.6%), lack of incentives (17.9%), doubts of the efficacy of available therapies on smoking cessation (13.0%) and fear of damaging the doctor–patient

Table 1. Demographic profile of doctors

	Respondents ($n = 757$) *n* (%)*	Nonrespondents ($n = 3,243$) *n* (%)*
Gender		
Male	592 (78.2)	2,513 (77.5)
Female	165 (21.8)	730 (22.5)
Age (yr)		
< 30	256 (33.8)	1,034 (31.9)
31–40	224 (29.6)	1,005 (31.0)
41–50	123 (16.3)	548 (16.9)
> 50	154 (20.3)	655 (20.2)
Number of years of practice		
< 10	411 (54.3)	
10–20	188 (24.8)	Not available
21–30	86 (11.3)	
> 30	72 (9.5)	
Type of working establishment		
Public hospital	488 (64.5)	1,981 (61.1)
Private hospital/clinic	234 (30.9)	1,138 (35.1)
University	35 (4.6)	123 (3.8)
Smoking status		
Current smoker	33 (4.3)	
Non-smoker	708 (93.6)	Not available
Ex-smoker (quit for > 6 mo)	16 (2.1)	
Training on smoking cessation-related issues		
None	376 (49.7)	
< 3 hr	278 (36.7)	Not available
≥ 3 hr	103 (13.6)	

**Percentage may be greater or less than 100% due to the rounding of figures.*

relationship (7.0%). Only 25.0% of the respondents reported that they had read smoking cessation guidelines available in other countries (24.1% had not heard of any, and 50.8% had not read any guidelines).

Being aged 30 or below, working in private hospitals, having received training for at least 3 hours, holding positive beliefs, possessing more favorable attitudes and higher confidence level were significantly associated with asking about smoking (Tables 4 and 5). Recording of smoking status was significantly associated with younger age (< 40 years), < 10 years of practice, working in a university, having received training for at least 3 hours, holding positive beliefs, possessing more favorable attitudes and higher confidence level (Tables 4 and 5). Advising patients to quit was significantly associated with age > 50 years, practicing for > 30 years, working in a university or private hospital, being a non-smoker or ex-smoker, having received training for at least 3 hours, holding positive beliefs and higher confidence level (Tables 4 and 5). Being male, age > 50 years, practicing for > 30 years, working in a private hospital, being a current smoker, having received training for at least 3 hours, possessing good knowledge, more favorable attitudes and higher confidence level were significantly associated with arranging follow-up (sometimes or always) (Tables 4 and 5).

Discussion

This study of doctors' knowledge, beliefs, attitudes, confidence and clinical practice regarding smoking cessation in Hong Kong has provided useful insights into the factors that may influence the promotion of smoking cessation in a clinical setting. The identification of factors associated with the usual practice of tobacco cessation among doctors enhances the usefulness of our findings both locally and regionally to other similarly developed and socialized communities that have not yet established smoking cessation services in

Table 2. Comparison of demographic characteristics of doctors with different knowledge, beliefs, attitudes and confidence levels

	Knowledge		Beliefs		Attitudes		Confidence	
	Better *n* (%)	Poor *n* (%)	Positive *n* (%)	Negative *n* (%)	More favorable *n* (%)	Less favorable *n* (%)	Higher *n* (%)	Lower *n* (%)
Age (yr)								
≤30	122 (34.3)	134 (33.4)†	89 (25.3)	167 (41.2)‡	158 (38.3)	98 (28.5)†	122 (28.9)	134 (40.1)‡
31–40	105 (29.5)	119 (29.8)	103 (29.3)	121 (30.0)	103 (25.1)	121 (35.2)	134 (31.8)	90 (26.9)
41–50	75 (21.1)	47 (11.8)	81 (23.1)	41 (10.1)	61 (14.8)	61 (17.7)	51 (12.0)	71 (21.3)
>50	54 (15.1)	100 (25.0)	78 (22.2)	76 (18.8)	90 (21.8)	64 (18.6)	115 (27.3)	39 (11.7)
Gender								
Male	348 (76.8)	244 (80.3)	254 (73.4)	338 (82.2)†	307 (73.0)	285 (84.6)‡	343 (80.9)	249 (74.8)§
Female	105 (23.2)	60 (19.7)	92 (26.6)	73 (17.8)	113 (27.0)	52 (15.4)	81 (19.1)	84 (25.2)
Years of practice								
<10	188 (53.4)	223 (55.2)†	152 (44.2)	259 (62.9)‡	213 (53.7)	198 (55.0)	226 (53.1)	185 (56.1)‡
10–20	108 (30.7)	79 (19.6)	112 (32.6)	75 (18.2)	89 (2.6)	98 (27.2)	82 (19.2)	105 (31.8)
21–30	29 (8.2)	57 (14.1)	38 (11.0)	48 (11.6)	50 (12.6)	36 (10.0)	56 (13.1)	30 (9.1)
>30	27 (7.7)	45 (11.1)	42 (12.2)	30 (7.3)	44 (11.1)	28 (7.8)	62 (14.6)	10 (3.0)
Work type								
Public hospital	287 (65.4)	201 (63.2)	214 (62.4)	274 (66.2)†	234 (65.5)	254 (63.5)	239 (63.9)	249 (65.0)‡
Private hospital or clinic	129 (29.4)	105 (33.0)	121 (35.3)	113 (27.3)	107 (30.0)	127 (31.7)	114 (30.5)	120 (31.3)
University	23 (5.2)	12 (3.8)	8 (2.3)	27 (6.5)	16 (4.5)	19 (4.8)	21 (5.6)	14 (3.7)
Smoking status								
Current smoker	18 (3.8)	15 (5.6)	16 (4.1)	17 (4.9)	25 (5.9)	8 (2.5)†	21 (4.9)	12 (3.9)
Non-smoker or ex-smoker*	453 (96.2)	255 (94.4)	375 (95.9)	333 (95.1)	396 (94.1)	312 (97.5)	410 (95.1)	298 (96.1)
Training on smoking cessation								
None	150 (42.2)	226 (56.6)†	151 (43.5)	225 (55.3)	206 (48.2)	170 (52.0)	158 (43.5)	218 (55.8)†
<3 hr	142 (40.0)	136 (34.1)	137 (39.5)	141 (34.6)	158 (37.0)	120 (36.7)	136 (37.5)	142 (36.3)
≥ 3 hr	63 (17.8)	37 (9.3)	59 (17.0)	41 (10.1)	63 (14.8)	37 (11.3)	69 (19.0)	31 (7.9)

**Ex-smokers were analyzed with non-smokers due to the smaller number; †$p<0.01$; ‡$p<0.005$; §$p<0.05$.*

Table 3. Usual practice on smoking cessation among doctors

	n (%)
Ask about smoking (yes)	582 (77.0)
Record smoking status (yes)	592 (78.2)
Advise to quit smoking	
To all smokers	219 (29.0)
To smokers with relevant medical condition	344 (45.3)
No	194 (25.7)
Arrange follow-up	
Always	22 (3.0)
Sometimes	128 (17.0)
No	607 (80.0)

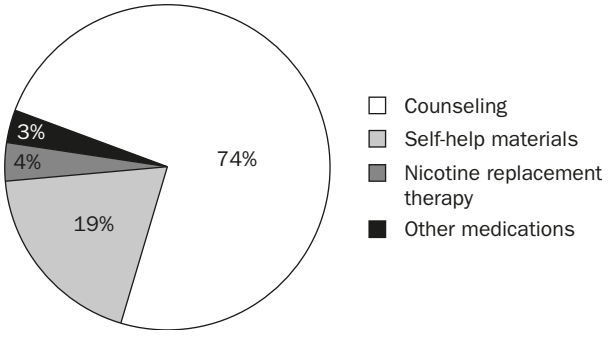

Figure 1. Type of intervention given to quit smoking by doctors (*n* = 563).

a clinical setting. However, the generalizability of our findings to all doctors in Hong Kong and outside of Hong Kong should be considered with caution.

The study indicates that Hong Kong doctors may be missing opportunities for smoking cessation intervention due to their lack of knowledge on smoking cessation-related issues and lack of confidence in providing smoking cessation services. We identified several factors associated with better knowledge of smoking cessation, positive beliefs about and favorable attitudes towards smoking cessation practice and higher confidence in providing smoking cessation service, which should be incorporated in the design of future programs for doctors. Consistent with an Australian study,[17] we found that previous training was associated with better knowledge of and higher confidence in smoking cessation. An organized training program would be useful for training not only doctors but also other health care professionals, such as nurses, pharmacists and physiotherapists.[20] However, training was not associated with doctors' beliefs and attitudes in this study. The decreasing trends of knowledge with increasing age and increasing years of practice reflects the need to include smoking cessation within the continuous medical education program.

The available guidelines on smoking cessation from the UK and the USA recommend that doctors should establish and record the smoking status of every adult patient.[7,19] However, we found that a quarter of the respondents in this study did not record the smoking status of their patients. As the first important task in any effective smoking cessation intervention is to determine the target audience, clinical staff should routinely assess and record the smoking status of every patient as a vital sign.

We found that despite knowing the smoking status of patients, only 1 in 3 doctors advised all smoking patients to quit. Consistent with the findings of the aforementioned Australian study,[17] we found in our study that more positive beliefs and higher confidence level was associated with advising patients to quit. On the other hand, in this study, positive beliefs, favorable attitudes and higher confidence were associated with asking about and recording smoking status. This indicates the need for professional training that would address local doctors' beliefs, attitudes and confidence levels. However, consistent with the findings from other overseas studies,[15,20,21] Hong Kong doctors also faced a number of potential barriers in providing smoking cessation advice, such as low patient motivation to quit smoking, lack of expertise and lack of time to provide smoking cessation counseling. Finding a way to surmount these barriers should be a priority in promoting tobacco control activities by health care professionals. We also found that only a minority of doctors prescribed medications such as nicotine replacement therapy and bupropion, which provide effective pharmacologic support for smoking cessation. The low use of pharmacotherapy might be explained by doctors' doubts about the effectiveness of such products (62% of doctors surveyed were unsure of the effectiveness of bupropion). This could also be related to doctors' lack of confidence and appropriate skills in providing tobacco dependency treatment.[22]

Follow-up sessions make an important contribution to the success of smoking cessation efforts.[23] However, only 3% of the Hong Kong doctors always arranged follow-up sessions for their smoking patients to discuss their progress in quitting. This may be associated with the potential barriers that doctors encountered when approaching such patients with follow-up arrangements. It is also possible that doctors were not aware of the usefulness of follow-up arrangements in smoking cessation. Furthermore, follow-up sessions are not without cost, which might have played a role in the low

Table 4. Comparison of demographic characteristics between doctors with or without usual practice in smoking cessation

	Ask about smoking habits		Record smoking status		Advise patient to quit		Arrange follow-up	
	Yes *n* (%)	No *n* (%)	Yes *n* (%)	No *n* (%)	Yes *n* (%)	No *n* (%)	Yes *n* (%)	No *n* (%)
Age (yr)								
≤ 30	214 (36.9)	36 (22.5)†	215 (37.1)	35 (21.7)†	159 (28.2)	91 (51.7)†	37 (24.8)	213 (36.1)†
31–40	154 (26.5)	65 (40.6)	177 (30.6)	42 (26.1)	176 (31.3)	42 (23.9)	35 (23.5)	184 (31.1)
41–50	87 (15.0)	33 (20.6)	88 (15.2)	32 (19.9)	88 (15.6)	32 (18.1)	17 (11.4)	103 (17.4)
> 50	125 (21.6)	26 (16.3)	99 (17.1)	52 (32.3)	140 (24.9)	11 (6.3)	60 (40.3)	91 (15.4)
Gender								
Male	447 (75.9)	137 (81.5)	452 (76.0)	132 (81.5)	446 (77.3)	138 (76.6)	126 (84.0)	458 (75.5)‡
Female	142 (24.1)	31 (18.5)	143 (24.0)	30 (18.5)	131 (22.7)	42 (23.4)	24 (16.0)	149 (24.5)
Years of practice								
< 10	308 (53.0)	98 (59.0)	341 (58.2)	65 (40.4)†	278 (48.9)	128 (71.9)†	62 (41.6)	344 (57.5)†
10–20	147 (25.3)	38 (22.9)	138 (23.5)	47 (29.2)	156 (27.4)	29 (16.3)	34 (22.8)	151 (25.3)
21–30	65 (11.2)	20 (12.0)	65 (11.1)	20 (12.4)	69 (12.1)	16 (9.0)	29 (19.5)	56 (9.4)
> 30	61 (10.5)	10 (6.1)	42 (7.2)	29 (18.0)	66 (11.6)	5 (2.8)	24 (16.1)	47 (7.8)
Work type								
Public hospital	373 (64.3)	108 (65.1)§	370 (65.9)	111 (60.0)§	339 (59.6)	142 (80.3)†	75 (50.4)	406 (68.0)†
Private hospital or clinic	188 (32.4)	43 (25.9)	163 (29.1)	68 (36.8)	201 (35.2)	30 (16.9)	67 (44.9)	164 (27.5)
University	19 (3.3)	15 (9.0)	28 (5.0)	6 (3.2)	29 (5.1)	5 (2.8)	7 (4.7)	27 (4.5)
Smoking status								
Current smoker	25 (4.4)	7 (4.2)	25 (4.3)	7 (4.5)	15 (2.7)	17 (9.6)†	13 (8.9)	19 (3.2)†
Non-smoker or ex-smoker*	546 (95.6)	161 (95.8)	558 (95.7)	149 (95.5)	547 (97.3)	160 (90.4)	133 (91.1)	574 (96.8)
Training on smoking cessation								
None	278 (49.6)	83 (51.2)§	281 (49.7)	80 (50.0)§	226 (45.4)	135 (60.0)‡	44 (27.3)	317 (56.2)†
< 3 hr	193 (34.4)	73 (45.1)	195 (34.5)	71 (44.4)	194 (39.0)	71 (31.6)	70 (43.5)	196 (34.8)
≥ 3 hr	90 (16.0)	6 (3.7)	89 (5.8)	9 (5.6)	78 (15.6)	19 (8.4)	47 (29.2)	51 (9.0)

**Ex-smokers were analyzed with non-smokers due to the smaller number; †$p < 0.005$; ‡$p < 0.05$; §$p < 0.01$.*

Table 5. Comparison of doctors' usual practice towards smoking cessation with knowledge, beliefs, attitudes and confidence

	Ask about smoking habits		Record smoking status		Advise patient to quit		Arrange follow-up	
	Yes *n* (%)	No *n* (%)	Yes *n* (%)	No *n* (%)	Yes *n* (%)	No *n* (%)	Yes *n* (%)	No *n* (%)
Knowledge								
Better	291 (48.8)	65 (40.4)	296 (48.2)	60 (38.9)	268 (45.7)	88 (51.8)	62 (39.7)	294 (48.9)*
Poor	305 (51.2)	96 (59.6)	318 (51.8)	88 (57.1)	319 (54.3)	82 (48.2)	94 (60.3)	307 (51.1)
Beliefs								
Positive	322 (54.6)	24 (14.4)†	290 (48.6)	56 (35.0)‡	301 (52.1)	45 (25.1)†	79 (56.8)	267 (43.2)
Negative	268 (45.4)	143 (85.6)	307 (51.4)	104 (65.0)	277 (47.9)	134 (74.9)	60 (43.2)	351 (56.8)
Attitudes								
More favorable	354 (60.1)	64 (38.1)†	358 (60.1)	60 (37.0)†	320 (767.5)	98 (53.6)	95 (63.3)	323 (53.2)*
Less favorable	235 (39.9)	104 (61.9)	237 (39.9)	102 (63.0)	154 (32.5)	85 (46.4)	55 (36.7)	284 (46.8)
Confidence								
Higher	347 (59.2)	78 (45.6)‡	350 (59.2)	75 (45.2)‡	347 (60.0)	78 (43.6)†	120 (77.9)	305 (50.6)†
Lower	239 (40.8)	93 (54.4)	241 (40.8)	91 (54.8)	231 (40.0)	101 (56.4)	34 (22.1)	298 (49.4)

*$p<0.05$; †$p<0.005$; ‡$p<0.01$.

follow-up rates. Policymakers need to address the reimbursement issue in the service planning of smoking cessation.

Although only a quarter of doctors had read smoking cessation guidelines available elsewhere, most agreed that there was a need for guidelines which they can use in managing their smoking patients. In the absence of local guidelines, which require time and resources to develop, the appropriate authorities should promote the use of the US Clinical Practice guidelines[6] among clinicians.

Some limitations of this study should be noted. First, the response rate was low (18.9%). Low response rates are fairly common in surveys involving Hong Kong doctors. For example, another survey involving doctors in Hong Kong had a response rate of only 18.5%.[24] The reason for the low response rate in this case may be that many doctors are not interested in smoking cessation-related activity, and some do not believe that they have a responsibility to provide a smoking cessation service. The use of a postal survey without any incentive may also have been a factor in the low response rate.[25] Moreover, we sent the questionnaire to doctors only once. It was possible that some doctors might have missed the questionnaire or did not feel any urgency to complete it. Second, no information on the characteristics of the nonresponding doctors is available, and it is possible that those who responded to the survey differ significantly from those who did not. This limits the generalizability of the study findings. However, the demographic characteristics of the respondents were almost identical (78.2% male; 36.6% aged above 40 years) to those of the test population (77.5% male; 37.1% aged above 40 years). This reflects that the respondents were representative of the study population.

In conclusion, the results of this survey suggest that a significant proportion of Hong Kong doctors do not establish and record the smoking status of their patients as a matter of routine; as a result, smoking patients seldom receive smoking cessation advice. The study also found a lack of knowledge, inappropriate beliefs and less favorable attitudes towards smoking cessation and lack of confidence in providing smoking cessation service among some Hong Kong doctors. Doctors can help smokers quit smoking, but must have the appropriate skills, because advising or counseling patients on smoking cessation is different from clinical training, where clear directive advice and instruction are important. The lack of such skills at present is reflected in the low confidence level of many respondents who encountered smoking patients in real practice. Therefore, training programs which emphasize that doctors should

offer a smoking cessation service, foster coping skills to increase confidence and counseling skills for smoking cessation and relapse prevention, and provide information about current treatment strategies should be arranged to improve the general practice on smoking cessation. Development and implementation of local clinical practice guidelines should also be considered, but it should not undermine the use of the US Clinical Practice guidelines.[7]

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Appendix. *Questions asked in the survey on knowledge, beliefs, attitudes and confidence*

A. KNOWLEDGE

Prevalence of smoking in Hong Kong (1 item)

1. Prevalence of adult smokers in Hong Kong is
   ☐ <10% ☐ 11–12% ☐ 15–16% ☐ 20–25% ☐ 26–30% ☐ >30%

Knowledge on treatment of nicotine dependency (2 items)

2. Nicotine replacement therapy (e.g. patch, gum, inhaler) can improve smokers' chance of stopping
   ☐ Agree ☐ Unsure ☐ Disagree

3. Bupropion (e.g. Zyban) is effective in helping people quit smoking
   ☐ Agree ☐ Unsure ☐ Disagree

Risks associated with passive smoking (5 items)

4. Neonatal death is associated with passive smoking
   ☐ Agree ☐ Unsure ☐ Disagree

5. Maternal smoking during pregnancy increases the risk of sudden infant death syndrome
   ☐ Agree ☐ Unsure ☐ Disagree

6. Passive smoking increases the risk of lung disease in non-smoking adults
   ☐ Agree ☐ Unsure ☐ Disagree

7. Passive smoking increases the risk of heart disease in non-smoking adults
   ☐ Agree ☐ Unsure ☐ Disagree

8. Paternal smoking increases the risk of lower respiratory tract illnesses such as pneumonia in exposed children
   ☐ Agree ☐ Unsure ☐ Disagree

Knowledge on smoking cessation services available in Hong Kong (2 items)

9. Are there any smoking cessation clinics in HK?
   ☐ Yes ☐ No ☐ Don't know

10. Are there any smoking cessation Quitlines in HK?
    ☐ Yes ☐ No ☐ Don't know

B. BELIEFS

1. Patient's chances of quitting smoking are increased if a health professional advises him/her to quit
   ☐ Strongly agree ☐ Agree ☐ Unsure ☐ Disagree ☐ Strongly disagree

2. Nicotine replacement therapy should be made available on all hospital authority prescriptions
   ☐ Strongly agree ☐ Agree ☐ Unsure ☐ Disagree ☐ Strongly disagree

3. Health professionals should routinely ask about their patients' smoking habits
   ☐ Strongly agree ☐ Agree ☐ Unsure ☐ Disagree ☐ Strongly disagree

4. Health professionals should routinely advise their patients to quit smoking
   ☐ Strongly agree ☐ Agree ☐ Unsure ☐ Disagree ☐ Strongly disagree

5. Smoking in enclosed public places (such as restaurants, bars, shopping malls) should be prohibited
   ☐ Strongly agree ☐ Agree ☐ Unsure ☐ Disagree ☐ Strongly disagree

6. Health professionals should routinely advise patients who smoke to avoid smoking around children
   ☐ Strongly agree ☐ Agree ☐ Unsure ☐ Disagree ☐ Strongly disagree

C. ATTITUDES

Level of preparation

1. How well prepared do you feel you are when counseling patients on how to stop cigarette smoking?
   ☐ Very well prepared ☐ Somewhat prepared ☐ Not at all prepared

Need for guidelines

2. Do you think there is a need for guidelines on smoking cessation in Hong Kong?
   ☐ Yes ☐ No ☐ Don't know
3. Do you think that guidelines would be helpful in managing your smoking patients?
   ☐ Yes ☐ No ☐ Don't know

D. CONFIDENCE

Perceived knowledge and skills

1. My current knowledge is sufficient for helping patients to stop smoking
   ☐ Strongly agree ☐ Agree ☐ Unsure ☐ Disagree ☐ Strongly disagree
2. I can explain the risks attributed to smoking in detail to patients
   ☐ Strongly agree ☐ Agree ☐ Unsure ☐ Disagree ☐ Strongly disagree
3. My current skills are sufficient for helping patients to stop smoking
   ☐ Strongly agree ☐ Agree ☐ Unsure ☐ Disagree ☐ Strongly disagree

Confidence level in real practice

4. I know how to prescribe medication (nicotine replacement therapy/bupropion) to treat tobacco dependency
   ☐ Strongly agree ☐ Agree ☐ Unsure ☐ Disagree ☐ Strongly disagree
5. I can assess a smoker's different stages of readiness to quit
   ☐ Strongly agree ☐ Agree ☐ Unsure ☐ Disagree ☐ Strongly disagree
6. I can assess a smoker's level of nicotine dependency using the Fagerstrom score
   ☐ Strongly agree ☐ Agree ☐ Unsure ☐ Disagree ☐ Strongly disagree
7. I can help a smoker to quit even if the smoker thinks that it is difficult to give up
   ☐ Strongly agree ☐ Agree ☐ Unsure ☐ Disagree ☐ Strongly disagree