

Smoking patterns among primary health care attendees, Al-Qassim region, Saudi Arabia

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نماذج التدخين بين المترددين على مرافق الرعاية الصحية الأولية في منطقة القصيم في المملكة العربية السعودية

ناصر الشاذلي الحداد، طارق علي الحبيب، مزمل حسن عبد القادر، ياسر سعيد الغامدي، نسيم أختري قريشي

الخلاصة: تمت دراسة عرضانية لمعدل انتشار التدخين والنماذج الاجتماعية والديموغرافية والمرافضة المرافقة له، بين المترددين على مرافق الرعاية الصحية الأولية في المملكة العربية السعودية، وذلك باستخدام استبيان مصمم جزئياً من 44 مادة لجمع المعطيات من 1752 مريضاً في 25 مركزاً من مراكز الرعاية الصحية الأولية التي تم اختيارها عشوائياً. وكانت النسبة المئوية للمدخنين 52.3%. ومع أن 85% من المدخنين كانوا من البالغين فإن 8.6% منهم بدأوا بالتدخين قبل عمر 12 سنة. وقد أبدى المدخنون أسباباً متراكبة للتدخين ذكروا فيها ضغوط الزملاء. أما غير المدخنين فذكروا الحجج الدينية والصحية التي تنفر من التدخين، ومن بين جميع المدخنين كان 92.8% راغبين في تعلم استراتيجيات الإقلاع عن التدخين، في حين كان 11.8% منهم يجهلون مخاطره وأبلغ 32.4% عن ظواهر الامتناع عن النيكوتين. وإلى جانب وجود 13.4% منهم يتعاطون الكحول فإن 81.8% أبلغوا عن مرض عضوي مرافق.

ABSTRACT Prevalence, sociodemographic patterns and medical co-morbidity of smoking among a cross-section of primary health care (PHC) clients in Saudi Arabia were examined. We used a 44-item semi-structured questionnaire to collect data from 1752 patients at 25 randomly selected PHC centres. Percentage of smoking was 52.3%. Although 85% were adult smokers, 8.6% began smoking before age 12. Smokers gave overlapping reasons to smoke including peer pressure; non-smokers gave religious and health logics against smoking. Of all smokers, 92.8% wanted to learn cessation strategies, 11.8% were ignorant of hazards and 32.4% reported manifestations of nicotine withdrawal. Besides alcohol use (13.4%), 81.8% had co-morbid physical disease.

Profil du tabagisme chez les personnes qui consultent dans les centres de soins de santé primaires, Région d'Al-Qassim (Arabie saoudite)

RESUME La prévalence, les caractéristiques socio-démographiques et la comorbidité médicale du tabagisme ont été examinés dans une étude transversale des utilisateurs des services de soins de santé primaires (SSP) en Arabie saoudite. Nous avons utilisé un questionnaire semi-structuré à 44 items pour recueillir des données auprès de 1752 patients dans 25 centres SSP choisis de manière aléatoire. Le pourcentage de tabagisme s'élevait à 52,3 %. Même si 85 % des sujets étaient des fumeurs adultes, 8,6 % avaient commencé à fumer avant l'âge de 12 ans. Les fumeurs ont donné des raisons de fumer qui se recourent, notamment la pression des pairs ; les non-fumeurs ont avancé des arguments logiques religieux et sanitaires contre le tabagisme. Sur l'ensemble des fumeurs, 92,8 % souhaitaient apprendre à cesser de fumer, 11,8 % ne connaissaient pas les risques et 32,4 % signalaient des manifestations de sevrage à la nicotine. Outre la consommation d'alcool (13,4 %), 81,8 % avait une comorbidité physique.

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Introduction

Evidence-based data robustly suggest the etiological role of smoking in physical and neuropsychiatric disorders among both active and passive smokers [1–3]. Moreover, tobacco smoking has been officially recognized as a substance use disorder that has epidemiological, etiological, phenomenological, pathophysiological, co-morbid, diagnostic, therapeutic, prognostic and outcome domains [4]. It is a major public health problem that causes millions of premature deaths and huge economic losses globally every year [3]. Despite substantial progress including enforced restrictions on smoking in workplaces, the public still remains misinformed about its health risks [5–6]. Furthermore, adolescents, who are the most vulnerable, receive vague messages about smoking [7]. Therefore, concerned authorities have started global ‘quit smoking’ campaigns and have also developed antismoking clinics, cessation strategies, drug therapies and rehabilitation programmes for smokers [4,8].

There is a tremendous amount of literature on smoking patterns in the Western world compared with what is available for developing countries. A review of smoking data in the Gulf countries found only 17 studies that primarily examined prevalence, predictors and patterns of smoking among healthy populations and provided strategies and recommendations for prevention, treatment and further research. Smoking among male psychiatric outpatients in Saudi Arabia has been examined, but to our knowledge, few studies have addressed smoking patterns in primary health care (PHC) settings [9–13]. Our cross-sectional study therefore aimed to explore prevalence, sociodemographics, medical comorbidity and patterns of smoking in a relatively large PHC population. We hy-

pothesized that the prevalence of smoking would be higher than reported in healthy populations and that the smoking habits of PHC consumers would not differ much from studies in both the Gulf countries and the industrialized nations.

Methods

To achieve these objectives, 25 of the 142 PHC centres that are uniformly distributed throughout the Al-Qassim region of Saudi Arabia were selected randomly. The selected PHC centres were classified as either urban or rural by matching them to a previous categorization of each PHC centre [12–13]. Then 25 senior general practitioners (GPs) from the selected PHC centres were briefed and trained via telephone to administer the semi-structured questionnaire. In addition to clarification of immediate queries, GPs were informed that if they had any problems completing the form, they could contact the research team by telephone. Following this, 100 copies of the questionnaire were sent to each selected PHC centre. GPs were advised to select by non-systematic randomization only new male patients for personal interviews to complete the 100 questionnaires within 3 months. This was to be done without interfering with the regular delivery of administrative, technical and health services to PHC clients. Each questionnaire took approximately 30–45 minutes to complete.

A semi-structured questionnaire with 44 items that was used in our previous research on smoking among psychiatric outpatients was slightly modified for the current study [9]. In the final questionnaire, 2 questions were changed to accommodate the different focus of the current study; the phrase ‘mental illness’ was substituted with ‘physical disorder’ in 2 ques-

tions and the diagnosis of all diseases was sought.

During the first week of the study, GPs were briefed and were advised to read and understand the questionnaire. Most (96%) did not experience difficulty in completing it. A minority (4%) raised some queries, which were: 1) if the patient is a non-smoker, is the entire questionnaire to be completed? GPs were advised to complete only the demographic part and the reasons for not smoking. They were also requested to note their diagnosis plus any additional information about smoking the patient would like to offer. 2) If the patient is an ex-smoker that completely stopped smoking 6 months prior to our study, is the entire questionnaire to be completed? GPs were told to complete the demographic portion of the questionnaire plus reasons for quitting, date of quitting, use of treatments for smoking cessation and diagnosis along with any additional information about smoking. Our responses to these queries were disseminated to all participating GPs.

Current smokers were broadly defined as those who smoke regularly or occasionally on a daily, weekly or monthly basis. Non-smokers were defined as those who never smoked. Thus, the sociodemographics and diagnosis of all clients—smokers, ex-smokers and non-smokers—were recorded. The demographic data (11 items) included name, sex, file number, date, age, level of education, marital status, residence, occupation, family type and approximate monthly income. Family type was categorized as: 1) nuclear, consisting of only one married couple living with unmarried children or 2) joint or extended, that is a married couple living with married children. The questionnaire also comprised 32 items about smoking patterns and 1 item for diagnosis.

Frequency distributions and chi-squared test were used to determine asso-

ciations among categorical variables between smokers and non-smokers. Student *t*-test was used to determine differences among continuous variables. *P*-value of ≤ 0.05 was significant. *SPSS* version 10.0 for Windows was used for data analysis.

Results

This study took place from July 1999 to July 2000 and 1752 PHC patients were included in our final analysis. Approximately 15% of participants had grossly incomplete responses and another 15% refused to participate; hence, only 70% (1752) of the original 2500 questionnaires were used in the final analysis. Nonetheless no statistically significant demographic differences were observed between participants and non-participants. The one-year study period included planning, briefing, data collection and analysis. Furthermore, the GPs, 100% of whom were expatriates, regularly took 45 days annual vacation, attended multiple training courses within and outside the region and attended regional meetings and conferences that were held during working hours. An audit is needed to determine the number of patients, new as well as repeat, attending each urban and rural PHC centre. The daily census of PHC clients was impressively high and differed between rural and urban settings. Although no females were included in this study, 4.7%–16% of women smoke cigarettes in Riyadh [11,12].

Sociodemographic parameters

Of 1752 PHC clients, 917 (52.3%) were current smokers. The mean age and standard deviation of PHC patients was 35.5 ± 11.5 years with 95% confidence interval (CI) 35–36. No significant age difference was observed between smokers (mean age \pm SD = 35.43 ± 11.6 years) and non-

smokers (mean \pm SD = 36.23 \pm 13.10 years; $P > 0.5$). More than half were educated (938, 53.5%), unemployed (960, 54.8%), single (987, 56.3%), urban dwellers (992, 56.6%) or living in a joint or extended family (1000, 57.1%). Monthly mean income was 4105.29 Saudi rials (US\$ 1.00 = 3.76 SR) with a standard deviation of 4059.24 and 95% CI 3848–4363. There was a significant difference between the income of smokers (mean \pm SD = 4089.86 \pm 310.97 SR) and non-smokers (mean \pm SD = 4201.24 \pm 1844.79 SR; $P < 0.05$). When variables for smokers and non-smokers were compared, significant differences were observed for education, employment status, marriage and family type ($P < 0.05$; Table 1).

Smoking patterns

According to our study, only 917 (52.3%) were current smokers and the remainder were either ex-smokers (71, 4.1%) or non-smokers (764, 43.6%). Non-smokers and ex-smokers (47.7%) gave the following overlapping reasons not to smoke: smoking is prohibited, or *haram*, in Islam (92%), smoking is disliked, or *makrooh*, in Islam (85%), smoking is injurious to health (87%) and cigarette buying is a waste of money (78%). Ex-smokers gave the following reasons for quitting: chronic physical ill health (85%), advice from key elderly relatives (68%) and death of a close relative attributed to smoking (8%).

Among the 917 smokers, 79 (8.6%) began smoking before age 12 and 780

Table 1 Sociodemographic characteristics of smokers and non-smokers

Variable	Smokers (n = 917)		Non-smokers (n = 835)		χ^2_1	P-value
	No.	%	No.	%		
<i>Education</i>						
Illiterate	382	41.7	432	51.7	17.445	0.0001
Literate	535	58.3	403	48.3		
<i>Occupation</i>						
Employed	344	37.5	448	53.7	45.308	0.00001
Unemployed	573	62.5	387	46.3		
<i>Marital status</i>						
Single	589	64.2	398	47.7	48.09	0.00001
Ever married	328	35.8	437	52.3		
<i>Residence</i>						
Urban	513	55.9	479	57.4	0.304	NS
Rural	404	44.1	356	42.6		
<i>Family type</i>						
Nuclear	504	54.9	248	29.7	112.808	0.00001
Extended or joint ^a	413	45.1	587	70.3		

^aExtended or joint family type = married couple living with married children.
NS = not significant.

(85.1%) began smoking at a young age (13–30 years). No reason for smoking was given by 499 (54.4%) whereas 418 (45.6%) smoked because they were either unhappy or anxious or had experienced peer pressure prior to smoking. Approximately half (517, 56.4%) smoked 20 or more cigarettes daily. More than half (521, 56.8%) used Marlboro Reds and the reasons for their preferences were: first experience was with Marlboro Red, quick push/effect, more nicotine and no rapid effect with other brands. The majority (790, 86.2%) smoked any time during the day. A minor proportion of smokers (95, 10.4%) were also using sheesha, cigars and pipes. Approximately 71.6% of smokers (657) smoked anywhere they chose to.

Approximately 57.3% of smokers (525) reported positive family history of smoking. The majority of smokers (809, 88.2%) knew the injurious effects of smoking on health, whereas 11.8% (108) were ignorant. Several sources of information were reported, including television (192, 20.9%), magazines (631, 68.8%) and other media. Approximately 10.3% of smokers (94) had no access to any source of information about the ill-health effects of smoking. A minority of smokers (83, 9.1%) gave a positive family history of death attributed to smoking. Most smokers (681, 74.3%) reported that their family members were aware of their smoking and the majority had family members (707, 77.1%) who advised them not to smoke. Only 22.9% (210) reported that their families tolerated their smoking. More than half of the smokers (622, 67.8%) felt stressed, guilty and ashamed buying cigarettes.

Approximately 34.2% of smokers (314) reported considerable increases in smoking for a variety of reasons, including marital discord, job problems, financial difficulties and residential difficulties. Among smokers, 78% (715) had made attempts to quit.

Of all smokers, 32.4% (297) reported symptoms including dizziness, craving, irritability, inattention, tiredness, headache, anxiety, weight gain and loneliness. Among smokers, 80.5% (738) expressed a desire to quit smoking. The majority (602, 65.6%) reported guilt, shame, anger, fear, anxiety, social embarrassment and minor quarrels during smoking. Only 13.4% of smokers (123) reported using alcohol. A little less than half (425, 46.3%) stated that they preferred taking either tea or Arabic coffee, or *qahwa*, while smoking. About 43.8% of smokers started smoking before developing physical problems or diseases whereas 11.5% began smoking after such illnesses. The majority of smokers (812, 88.5%) responded that smoking neither improves their ability to pay attention or focus, nor helps to quickly finish the job at hand. In response to additional information about smoking, the majority of smokers (851, 92.8%) reported that they need specific strategies for stopping smoking. PHC consumers with strong religious backgrounds, as reflected in their views related to 'additional comments', smoked considerably less ($P < 0.05$; Table 2).

Medical disorders and smoking

Of all PHC attendees, 18.2% (318 of 1752) had no medical disorders and more than half of these (213, 67%) were non-smokers. Table 3 shows that the specific medical diseases significantly associated with smoking were chest, musculoskeletal, allergic, dental and cardiac diseases ($P < 0.05$) while central nervous system and surgical diseases were significantly associated with non-smokers ($P < 0.05$). The distribution of medical disorders as a whole by smoking status (Table 4) revealed that medical diseases were significantly associated with smoking ($P < 0.05$).

Table 2 Distribution of religious beliefs about smoking by smoking behaviour as arbitrarily reflected in additional remark responses^a

Variable	Smokers		Non-smokers		χ^2	P-value
	No.	%	No.	%		
Smoking is <i>haram</i> ^b	275	29.9	483	57.8		
Smoking is <i>makrooh</i> ^c	352	38.5	181	21.7		
Smoking has no religious meaning	290	31.6	171	20.5	139.12	0.00001
Total	917		835			

^aGPs asked participants to express their personal opinions about smoking.

^bHaram = prohibited in Islam.

^cMakrooh = disliked in Islam.

Table 3 Distribution of medical diseases by smoking status (1434 of 1752 participants, 81.8%)

Medical diseases	Smokers (n = 812)		Non-smokers (n = 622)		Total	χ^2	P-value
	No.	%	No.	%			
Chest diseases	135	16.6	41	6.6	176	32.01	0.0001
Musculoskeletal disorders	123	15.2	46	7.4	169	19.62	0.0001
Abdominal diseases	85	10.5	73	11.7	158	0.46	NS
Trauma or surgical conditions	69	8.5	73	11.7	142	3.79	0.05
Allergic conditions	107	13.2	30	4.8	137	27.49	0.0001
Communicable diseases	67	8.3	61	9.8	128	0.86	NS
Ear, nose and throat diseases	64	7.9	49	7.9	113	0.01	NS
Dental diseases	76	9.4	26	4.2	102	13.53	0.0001
Skin diseases	53	6.5	41	6.6	94	0.01	NS
Metabolic diseases	39	4.8	33	5.3	72	0.96	NS
Cardiovascular diseases	48	5.9	17	2.7	65	7.50	0.0001
Central nervous system diseases	19	2.3	32	5.1	51	7.28	0.0001
Miscellaneous conditions	11	1.4	16	2.6	27	2.21	NS

NS = not significant.

Some smokers and non-smokers had more than 1 disease.

Table 4 Distribution of medical diseases by smoking

Variable	Smokers		Non-smokers		Total		χ^2_1	P-value
	No.	%	No.	%	No.	%		
With medical disease	812	88.6	622	74.5	1434	81.8		
Without medical disease	105	11.5	213	25.5	318	18.2	57.2	0.00001
Total	917		835		1752	100		

Discussion

We examined the prevalence of smoking, smoker sociodemographics and patterns among PHC patients. Our smoking prevalence of 52.3% was consistent with one study but was rather higher than in other Saudi studies, especially one of an adult PHC centre population in which smoking prevalence was 22% [9,10,13]. Smoking prevalence in other Gulf countries ranged from 18% to 42%, with the exception of Kuwait, where prevalence was 52% for Kuwaitis and 55% for non-Kuwaitis [14]. Thus, our study suggests that the prevalence of smoking is higher among patients visiting PHC centres. Selection bias may have influenced this rate.

In 1996, the reported prevalence of smoking in the US adult population was 50% and approximately 25% each were current smokers and ex-smokers and another 50% had never smoked cigarettes [4]. In 2000 and 2001, rates of smoking among US adults were approximately 23.3% and 22.8%, a modest but significant decline compared with 1993 when the prevalence rate was 25% [15,16]. Conversely, current smoking prevalence increased among persons aged 20–24 years with ≥ 13 years of education from 17.9% in 1992–1993 to 22.7% in 1999–2000. However, the prevalence of smoking in specialized populations such as persons with psychiatric disorders, cancers, ob-

structive lung diseases, coronary heart disease, hypertension, diabetes mellitus, osteoporosis and other diseases was reported to be approximately 2 to 3 times that of the general population, up to 40% to 100%. This was substantiated by a study in which approximately 58% of psychiatric outpatients were smokers [9].

Of course, methodological issues, sample characteristics, political and economic factors could explain the variable rates of smoking across cultures [17–19]. Overall, the prevalence of smoking is decreasing in the Western world and can be attributed to constant intensive antismoking campaigns, quit smoking programmes, public awareness of the ill effects of direct and second-hand smoke, antismoking education, school-based smoking prevention strategies, access to smoking treatment modalities and strict government antismoking policies. Health authorities, in coordination with the World Health Organization, must enhance their efforts by adopting such strategies for completely eradicating smoking from Gulf countries.

In our study, smokers were mostly adults who were unemployed, single, with some education and living in nuclear families with low income; this was similar to international data [15–18]. In contrast, smoking has been reported to be relatively more common among married, illiterate and employed people in Saudi Arabia in

1999 [20]. A US smoking survey suggested that smoking was relatively more common among people with General Educational Development diplomas, i.e. certification of the equivalent of 12 years of education proficiency, as compared with highly educated persons [15]. Researchers have questioned whether people with less formal education are more vulnerable to excessive smoking and to the variety of mass media campaigns that disseminate vague messages about unhealthy aspects of smoking [6,7]. Anti-smoking messages therefore should be clear, culture-specific and gender-specific and should target the illiterate [7].

We did not find any significant association between smoking and place of residence, unlike a study of female students in Riyadh; this might be attributed to sample differences and to the nature of co-morbid disorders [11]. However, early smoking behaviours and poverty along with rural residence have been strongly associated [17,19]. Unlike in fragmented nuclear families, joint families are a source of strong social support and a network that can absorb stresses linked to smoking and can help reduce smoking among teenagers and adults.

In our study, one-tenth of smokers were teenagers. These teenagers are likely to progressively develop nicotine addiction and medical diseases and, therefore, are in need of early school-based antismoking education and other relevant programmes [3,17,18].

Heavy smokers were more than 50% of our study population. They are probably less motivated to quit and are more harmful to others by spewing second-hand smoke into the air surrounding them. Heavy smokers have more psychomedical diseases like depression, anxiety disorders and psychoses comorbid with medical diseases and,

by inference, require intensive smoking cessation help [2-4,21].

Of all our smokers, 72% smoked anywhere, suggesting that homes, work and public places are plagued with the second-hand smoke associated with multiple health hazards among passive smokers [2,5,21]. By implication, restrictive policies meant to discourage smoking, including increased cigarette taxes and prices, need immediate enforcement [17,22].

We considered whether smoking, like alcoholism, has an inheritable component. In our study, 57% of family members were also smokers. In 1999, a review of smoking research indicated that data from family, adoption and twin studies supported a substantial genetic influence on the initiation and maintenance of smoking [22].

Gulf countries should produce television programmes similar to those used in effective mass media campaigns that educate viewers about the harmful effects of smoking and its prevention and treatment strategies [23]. In our study, 10% to 12% of smokers did not know of the injurious effects of smoking and had no access to media. The number of smokers in our study who unsuccessfully attempted to quit smoking was approximately 2 times higher than in a Canadian report [24]. They may need formal smoking cessation programmes, cognitive-behavioural therapies or counselling to motivate them and provide social support and suitable pharmacotherapies [4,5,8]. Most smokers expressed a desire to quit, and a great majority wanted to know more about smoking prevention and treatment strategies. A summary of pharmacological and psychosocial therapies is provided in Tables 5 and 6 to inform nurses, GPs, administrators and physicians who want to offer smoking cessation services to smokers [4,8,25].

Table 5 Main pharmacotherapies of smoking

Pharmacotherapy	Examples	Adverse effects
Nicotine replacement therapies	Nicotine gum, patch, nasal spray, inhalers and lozenges and lobeline	Irritation, coughing, sneezing, rhinitis, sore jaw, skin reactions, insomnia, vivid dreams and nausea
Antagonists	Mecamylamine hydrochloride	Abdominal cramps, constipation, dry mouth and headache
	Naltrexone hydrochloride	Elevated liver enzymes and nausea
Aversive medications	Silver acetate	Argyrisms
Nicotine-mimicking medications	Clonidine hydrochloride	Dry mouth, sedation, constipation, rarely hypotension, rebound hypertension and depression
	Anxiolytics including benzodiazepines, non-benzodiazepines and buspirone hydrochloride	Abuse
Buspirone hydrochloride	Beta-blockers	Various side-effects
	Minimal sedation, abuse	
	Antidepressants including bupropion hydrochloride, nortriptyline hydrochloride, doxepin hydrochloride, tryptophan and selective serotonin reuptake inhibitors	Substantial side-effects
	Stimulants like amphetamines and methylphenidate hydrochloride	Abuse potential and other adverse effects
Sensory replacement	Anorectics like fenfluramine hydrochloride and phenylpropanolamine hydrochloride	
	Black pepper extracts, capsaicin, de-nicotinized tobacco, flavourings and regenerated de-nicotinized smoke	
Atypical antipsychotics	(For schizophrenic patients with nicotine addiction)	Substantial adverse effects
Others	Acupuncture	

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Table 6 Nonpharmacotherapies of smoking

Nonpharmacotherapy	Example
Behaviour–cognitive therapy	Skills training and relapse prevention Stimulus control Aversive therapy Social support Contingency management Cue exposure Nicotine fading Relaxation Physiological feedback
Self-help material	
Educational and supportive group	
Hypnosis	
Exercise	
Family counselling and therapy	
Motivation enhancing interview	
Brief motivational intervention	
Counselling	The 5As or Brief Intervention Method = Ask, Advise, Assess, Assist/aid and Arrange
Biofeedback	
Interpersonal therapy	
Psychodynamic therapy	
Other	

A variety of medical diseases, the majority of which were significantly associated with smoking, were found in 88.6% of smokers. Non-smokers were significantly protected from smoking-related medical diseases with the exceptions of central nervous system and surgical diseases. The multiple co-morbidity of alcohol abuse, smoking and physical disorders enhances morbidity and mortality and requires intensive drug and social therapies [8,25]. Smoking is a major risk in more than 20 medical diseases, in particular, chest and cardiovascular diseases, that are prevent-

able [26]. Notably, smokers hospitalized with medical diseases are highly malleable and motivated to quit with behavioural intervention. Indeed, smoking is a slow suicidal and homicidal killer, and hence, there should be culturally sensitive and effective means to prevent and treat both smoking and addiction worldwide [2,4,21,27].

Conclusions

Despite some limitations of our study, we concluded that cigarette smoking is a com-

mon problem among PHC clients. Clients were characterized by certain sociodemographics, co-morbid diseases and patterns of smoking that were somewhat similar to national and international research. Although our study did not directly address what the primary care team of nurses and GPs can do for PHC clients, their roles in smoking prevention and treatment are essentially unequivocal. Besides establishing antismoking clinics in PHC centres, GPs and nurses should offer condensed training courses on smoking prevention and treatment. Finally, in addition to identifying the

underlying risk factors in community-based studies, future intervention research should explore the role of psychosocial and drug therapies in the management of tobacco addiction.

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