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Factors associated with smoking cessation among outpatients

THESE

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RESUME

INTRODUCTION Comprendre les déterminants de l'arrêt du tabagisme est un enjeu crucial, tant sur le plan clinique qu'en termes de santé publique. Dans l'étude transversale présentée ici, nous décrivons ce processus au travers de l'expérience d'ex-fumeurs.

METHODE Sur une période de 4 mois, nous avons proposé à chaque patient consultant la Policlinique Médicale Universitaire de Lausanne de participer à une étude visant à examiner leur expérience de l'arrêt du tabagisme. Les critères d'inclusion étaient les suivants: (1) âge ≥ 18 ans (2) connaissance minimale de la langue française (capacité de comprendre et répondre aux questions) (3) être un ex-fumeur (défini comme une personne actuellement abstinente mais ayant fumé au moins 100 cigarettes [≥ 5 paquets] pendant > 6 mois dans le passé). Une infirmière formée a mené des entretiens semi-structurés en face-à-face avec les ex-fumeurs recrutés en utilisant un questionnaire explorant les 67 questions parmi les thèmes suivants : caractéristiques démographiques et socioéconomiques ; habitudes antérieures de consommation ; stades de motivation ; influence de l'environnement social ; état de santé et préoccupations au sujet de la santé ; perception des risques et des bénéfices du tabagisme ; perception de la dépendance nicotinique ; offre d'un counseling médical spécifique ; connaissances sur les modalités thérapeutiques disponibles et méthodes utilisées pour arrêter de fumer. Les résultats sont exprimés en nombres absolus, en pourcentages, en moyennes et en dispersion.

RESULTATS 88 ex-fumeurs ont été inclus dans l'étude. Leurs caractéristiques démographiques et socioéconomiques sont les suivantes : La grande majorité d'entre eux sont des hommes (81%), l'âge moyen de 51 ans (variant de 19 à 81 ans), la moitié sont mariés, 72% de nationalité suisse et une grosse minorité (40%) ont une formation supérieure (universitaire ou équivalente). Leur histoire de consommation montre que l'âge moyen d'initiation du tabagisme est de 18 ans (entre 11 et 30 ans), et 23% ont commencé avant 16 ans. La consommation moyenne était de 26 cigarettes/jour. Presque tous les sujets (92%) étaient en contact fréquent avec des fumeurs à la maison, à l'école, au travail ou avec des amis au moment où ils ont commencé à fumer. La moitié des patients a essayé à une ou deux reprises d'arrêter de fumer avant de parvenir à une réelle abstinence. La durée depuis leur arrêt de consommation de cigarettes était en moyenne 5 ans et seuls 16% des sujets ont fumé occasionnellement depuis l'arrêt de leur consommation régulière. La majorité des ex-fumeurs (93%) dit avoir arrêté de manière abrupte et sans aucune aide thérapeutique (83%). 70 % des patients décrivent l'arrêt comme plutôt ou très difficile. Les problèmes décrits après l'interruption du tabagisme sont une prise pondérale (27%), la dépendance (23%), l'irritabilité (15%), les contacts avec des fumeurs (15%) et le manque de cigarette après les repas (11%). Les motivations principales à arrêter de fumer étaient des préoccupations générales au sujet de la santé (39%), des symptômes (23%) ou des signes cliniques spécifiques (22%), comme des problèmes cardiovasculaires ou respiratoires, ainsi que la conviction que le moment était venu d'arrêter (13%). D'autres motivations (comme les enfants, la grossesse, le coût...) étaient rarement mentionnées alors que 45% d'entre eux ont tout de même ressenti une pression de l'entourage, principalement de la part de personnes vivant sous le même toit, de leurs famille ou amis. L'effet positif majeur de l'abstinence est, à leurs yeux, une amélioration globale de la santé (48%) ou de leurs problèmes cardiovasculaires ou respiratoires (32%). Trois quarts (74 %) des sujets savent que les cigarettes dites « légères » sont aussi nuisibles que les cigarettes normales, et 90 % sont conscients du fait que la nicotine peut induire une dépendance ; la moitié d'entre eux ne réalisent toutefois pas que le filtre ne protège pas contre les dangers de l'inhalation de fumée. Près de trois quarts (73%) des ex-fumeurs disent avoir été interrogés sur leur consommation de tabac à l'occasion d'une consultation médicale motivée par un problème de santé et 30% clairement encouragés à arrêter par leur médecin. A ce sujet, 78 % sont d'avis qu'un médecin devrait par principe conseiller un arrêt du tabac.

CONCLUSION Les 88 ex-fumeurs de cet échantillon ont, pour la plupart, arrêté la cigarette par leurs propres moyens, après un ou plusieurs échecs. Leurs motivations principales étaient le souci de leur propre santé, globalement ou relativement à des symptômes ou des signes cliniques spécifiques, ce qui reflète le fait que les patients sont relativement bien informés des dangers liés à la consommation de tabac. Enfin, le fumeur est sensible à l'influence de son environnement social, et, dans cette perspective, l'abstinence devrait être encouragée par les autorités sanitaires, les professionnels de la santé et les autres membres de la communauté.

CONTENTS

1. INTRODUCTION

1.1 THE TOBACCO EPIDEMIC

Tobacco is known to be one of the major successes of epidemiology yet at the same time the most obvious failure of disease prevention. Despite much evidence of their health hazards, tobacco products are still heavily consumed in the industrialized world as well as in the developping countries. Smoking remains the main preventable cause of early morbidity and mortality in Europe, North America and Australia. As a consequence of its high prevalence in the general population and its pathogenic role in the developpement of multiple disease processes, tobacco control is currently considered as a major public health issue at the dawn of the 21st century. Globally, the increase in the frequency of tobacco-related disease and casualties has demonstrated epidemic features for the last few decades. The recent estimates of global tobacco-associated mortality -over 3 millions deaths/year- draws an evocative picture of the current impact of this risk behavior (1).

In Switzerland, there are around 1.7 million active smokers for about 7 million people, an approximate prevalence of 30% (2). These are not evenly distributed throughout all age groups; there is a clear clustering among youth and young adults: 31 to 44% of the young adult Swiss population currently smokes. The proportion of female smokers has been progressively « catching up » with that among men since the 70's. The proportion of heavy smokers (> 20 cig/d) is higher in men than among woman and culminates between the ages from 25 to 44 years (2,3).

We can estimate that each year 60 to 100'000 Swiss, recruited primarily during adolescence, become regular smokers. According to a WHO 1996 statement, the median age of initiation to tobacco use is inferior to 15 years in many countries (4). Old smokers who quit, often for personal health problems, are being constantly replaced by young initiates who thus perpetuate the public health burden of tobacco-related disease. In this respect, smoking can also be considered a pediatric and adolescent health issue. Before exploring the putative reasons for initiation and maintenance of this risk behavior, the medical consequences of cigarette smoking are reviewed.

1.2 RISKS OF SMOKING

The three major tobacco-related diseases are cancer, cardiovacular disease and chronic respiratory disease.

The smoker is repeatedly exposed to various organic compounds (polynuclear aromatic hydrocarbons and the nicotine-derived nitrosamines) present in tobacco smoke. These act as powerful carcinogenic or genotoxic agents by forming DNA adducts, which cause permanent mutations in critical genes. As a consequence, a smoker has a higher risk than non-smoker of dying from lung cancer (relative risk 6.5 to 26.9), depending on level of exposure (6,7,9). In addition to bronchogenic carcinoma, tobacco users are also at increased risk of oral, pharyngeal, laryngeal, oesophagal, bladder and pancreatic cancer.

Tobacco smoke is an established major risk factor for the developpement of arterial atheromatous plaques, presumably due to the exertion of direct oxydative damage to the arterial wall and by the effect of carbon monoxide on tissue hypoxia. The relative risk of cardiovascular death is 1.9 to 2.0 for smokers as compared with non smokers (7,8,10).

The irritant properties of inhaled smoke induce a chronic inflammation of respiratory mucosal membranes, manifested by a chronic bronchitis. They also accelerate ventilatory function decline associated with normal aging and thus lead to emphysema by progressive and dose-dependant irreversible peripheral alveolar damage. The relative risk for chronic obstructive lung disease in smokers is 6 times that of abstainers (10). These chronic obstructive pulmonary diseases lead to respiratory failure, a major permanently disabling outcome.

Many cohort studies have demonstrated an increase in the all-cause mortality rates of both genders. Half of all smokers die prematurely from tobacco-related disease (5). The American Cancer Society survival studies ACS I (1966) and II (1990) showed, for example, that the relative risk of premature death ranges between 1.6 and 2.2 for those at a low exposure level (1-20 cig/d) and between 1.9 and 2.4 for those at a higher exposure level ($\geq$ 20 cig/d (6,7). In Switzerland, the death toll attributable to tobacco products consumption is about 10'000 deaths/year (i.e. 12-17% of overall mortality), more than twice the 1976 figures. Tobacco is responsible for a loss of 100'000 to 120'000 years of healthy life (8,9).

1.3 BENEFITS OF SMOKING CESSATION

The tobacco-related morbidity and mortality risks are reversible after smoking cessation. Several studies have consistently demonstrated a decline in overall and specific mortality rates after quitting. According to the ACS I and II, the general mortality risk for low level exposure smokers decrease gradually after cessation to normal (1.0) after 10 years. For high level exposure, the risk decreases in a similar fashion but stabilizes at a slightly higher value (1.2) after 15 years. The same trend in risk decline is observed notably for cardiovascular disease and more slowly for cancer mortality (6,7). As for chronic pulmonary disease, the reduction in pulmonary function parallels that of non-smoker controls a few years after successful quitting (10,11). All these elements illustrate the crucial importance attributed to smoking cessation. Unfortunately, the spontaneous quit rate for tobacco is remarkably low: 2 to 4% per year. Providing information about the noxious consequences of smoking to the regular consumer is insufficient to help the smoker end his risk behavior. Since the 80's, medical research has shown the strong addictive potential of tobacco.

1.4 NICOTINE DEPENDENCE

Psychobiologic effects of nicotine

Nicotine is a water- and lipid-soluble base which is readily absorbed through oral mucosal membranes and pulmonary alveoli after inhalation, chewing or snuffing. It is then rapidly distributed from the bloodstream to various peripheral and central neural binding sites. Its actions on the peripheric nervous system include changes in skeletal muscle tension, stimulation of intestinal peristaltism, increased heart rate and modulation of the pituitary-adrenal hormonal axis. In the central nervous system, the subtle and diverse psychoactive effects of nicotine seem to be related to its simultaneous direct or indirect influence on the activity of several neuronal systems (12).

The instantaneous surge of bloodstream nicotine after each cigarette is associated with a variety of psychoactive effects showing a great inter- and intra-individual variability mainly depending on the psychosocial context and the time span since the last cigarette (13). The most frequently reported beneficial manifestations are sensory pleasure, cognitive arousal,

affect modulation (anxiolytic/antidepressive effect, stress control), hunger and weight control and facilitation of social contacts.

Nicotine is now widely recognized as an addictive chemical because of its numerous psychotropic effects and its capacity to induce a state of dependency. This state can be identified in the consumption pattern of most of the regular smokers, fitting both the DSM-IV and IDC-10 diagnostic criteria (appendices 1-2). This multifaceted dependence can be described in 3 distinct levels which illustrate nicotine's propensity to gradually penetrate different personality layers and become anchored in the intimate core of the individual by reinforcing the factors involved in the drive to compulsive use. These three levels can be described as following: 1. Psychological dependence: the smoker needs to repeatedly experience the psychoactive effect of nicotine (positive reinforcement). 2. Physical dependence: the smoker actively avoids the displeasing effects of nicotine deprivation (negative reinforcement). 3. Behavioral dependence: habit plays an important role in maintaining cigarette smoking. Because of its social acceptance and the high frequency of its daily use, tobacco smoking can be coupled with a great variety of professional and recreational activities. With time, the strengthening of these associations leads to automatic smoking as a conditioned response to a wide variety of internal and environmental stimuli.

It must be outlined that nicotine dependence is not a dichotomous outcome, either present or absent. Rather, it can be described as a dynamic process that evolves over time as a function of progressive biological tolerance and deeper integration of the smoking habit in the behavioral patterns of the consumer. As there are no biologic markers of tobacco addiction, several questionnaires have been developed to assess nicotine dependence. The most widely used is the Fagerström Test for Nicotine Dependence (FTND displayed in appendix 3), which provides the clinician with a score assumed to be representative of the severity of the addiction.

The addictive nature of tobacco is also supported by the occurrence of a typical abstinence syndrome, which appears after a few hours of nicotine deprivation. This withdrawal effect poses the motivated quitter an often overwhelming challenge (13). The abstinence symptoms start within few hours (2 - 24 hours), reach a climax from 24 to 48 hours, then gradually decrease to an end after 10 to 20 days of smoking cessation. The symptomatology is diverse

and may include a mix of the following complaints: general malaise (nausea, restlessness, tremor), cognitive depression (concentration, memory and task performance impairment), negative affect (anxiety, depressive or dysphoric mood, stress, insomnia, irritability, nervousness), cigarette craving (irresistible need to smoke), compulsive alimentary behavior (weight gain) and constipation. This syndrome may cause a significant distress or impairment in occupational, social or recreational functioning or an overt depressive disorder, which may preclude any quit attempt in a demanding and competitive modern society. The severity of the withdrawal symptoms combined with the cultural tolerance and the apparent short-term innocuity of cigarette smoking presumably accounts for the low spontaneous quit rate.

1.5 SMOKING CESSATION PROCESS

Smoking cessation is not merely a rational abandonment of an old and harmful habit but a critical life experience which engenders a fundamental change in daily activities and a long-lasting struggle for maintenance. One of the prerequisites of a cessation attempt is an awareness of the harmful nature of smoking and a firm motivation to change. When asked whether they envision a possible future cessation, about two-thirds of regular smokers want to quit in a more or less defined interval. One-third of regular smokers make a concrete attempt each year. In Switzerland, 600'000 tobacco users try to quit each year and about 100'000 actually succeed, a little more than 5.5% of the total smoker population (14).

Since the 1980's, some groups have focused on understanding the dependent smoker's personality and the mechanisms underlying the process of behavioral change which determine the transition to and maintenance of abstinence.

The stages of change model

The first determinant of the probability of successful change is the motivational status of the potential quitter. To evaluate this variable for clinical research and therapy, Prochaska and Goldstein proposed a categorial scale model, which is currently the most widely used in international medical litterature and clinical practice. They defined a continuum of 5 successive stages correlated to the timing of a planned quit attempt (15). Each category is affiliated with its own specific pronostic.

Table 1. Stages of change model: definitions and related prognosis

Stage	Definition	Probability abstinence at 6 months
1. Precontemplation	quit > 6 months	5%
2. Contemplation	quit ≤ 6 months	10%
3. Preparation	quit ≤ 1 month	14%
4. Action	active cessation	variable (upon intervention)
5. Maintenance	abstinence consolidation	variable (upon intervention)

This model describes smoking cessation as a dynamic process in which the so-called « happy smoker » (precontemplator) who enjoys his tobacco consumption becomes increasingly concerned by the harmful health impact of smoking (contemplator). He eventually adopts an adaptative strategy (preparation), which allows him to actively modify his behavioral pattern (action) and maintain this change (maintenance). Very often, the action phase is followed by a relapse, which brings the smoker back to the contemplation stage. He thereby will repete the same course again in a cyclic or spiral trajectory. Definitive termination of the risk behavior will occur after one or several unsuccessful attempts.

Apart from this model, data is scant and much uncertainty remains concerning other determinants of quitting. We currently lack a comprehensive description of the quitting process, which could allow us to define a set of pronostic variables. Many authors have analyzed interesting predictive variables, however, it is difficult to draw a conclusive picture from this crude material. In contrast, treatment modalities have been thoroughly reviewed in several metaanalytic papers (16,17,18,19,20). Furthermore, studies on the quitting process have been performed in specialized populations. We used data on swiss smokers, especially on those attending an ambulatory care clinic.

In the present cross-sectional survey, we aim to better understand the smoking cessation process through the profile of successful quitters. The effect of demographic and socioeconomic characteristics as well as smoking behavior variables (subjective benefits from tobacco use, perception of risks related to smoking, contact with other smokers, variation in social support, previous medical counseling) will be included in the analysis. The present study has also been designed to evaluate exsmokers' knowledge of nicotine dependence and

available treatment, as well as patients' opinions on previous medical care and tobacco counseling.

2. POPULATION AND METHODS

The survey was carried out during a 4-month period. Each consecutive patient consulting at the Lausanne University Outpatient Clinic (a primary care and internal medicine referral center) was asked to participate to a study to address tobacco smoke, irrespective of the reason for the consultation. The inclusion criteria were: 1) age ≥ 18 years 2) basic French language knowledge (ability to understand and answer the survey questions) 3) former smoker (defined as not currently smoking but has previously smoked at least 100 cigarettes i.e. ≥ 5 packs for > 6 months). The number of patients asked to participate was 1579, of whom 223 refused to participate, 780 did not meet the criteria for a prior tobacco dependence (at least 100 cigarettes for more than 6 months), 284 did not have a sufficient understanding of French, and 204 were current regular smokers. After excluding these patients, 88 (5.5%) patients were retained in the study.

A German questionnaire was previously developed for a telephone survey of the general Swiss population by the Bern University Institute of Social and Preventive Medicine for the Swiss Federal Office for Public Health. A trained nurse conducted semi-structured interviews with the Lausanne patients using a French translation of this questionnaire, which was adapted for face-to-face interviews. The French version used in this study was pilot-tested on 20 persons from the general population. The interview lasted about 15 to 20 minutes. The questionnaire included 67 questions exploring demographic and economic characteritics, consumption habits, motivational stage, influences from the social environment, health status and concerns, perception of risks and benefits of smoking, perception of nicotine dependence, previous medical counseling, knowledge about smoking cessation treatments and methods of past quit attempts. The results are descriptive and expressed in counts, percentages, means and ranges.

3. RESULTS

Eighty-eight consecutive former smokers were interviewed. Demographic and socioeconomic

characteristics are displayed in Table 2. The vast majority were men (81 %). The mean age was 51 years (range 19 to 81) and half (54 %) were married. Seventy-two percent were of Swiss nationality, 18 % were immigrants from European countries and 10 % were non-European immigrants. Half (49 %) were full-time workers. A minority (40 %) had obtained a high education (equivalent to a college or university degree). Two-thirds had an average household income exceeding 4000 SFr. per month.

Data on former tobacco consumption are also displayed in Table 2. The mean age of smoking initiation was 18 years (range 11 to 30); 23 % started before age 16. Average daily cigarette consumption ranged from 2 to 60 cigarette/day (mean 26 cigarette/day). Almost all (92%) were in frequent contact with smokers at home, at school, or at work place. The cessation data are displayed in Table 3. The majority reported they stopped abruptly (93 %) and without any kind of therapeutic help (83 %). Seventy percent of patients described the cessation process as rather or very difficult. The problems the former smokers had to cope with after quitting were weight gain (27%), dependence (23%), irritability (15 %), contact with active smokers (15 %) and lack of cigarette after meals (11 %). A quarter asked for some social support (mainly family, friends or collegues). A very small minority (< 2%) reported receving medical support and use of nicotine substitution. The duration of smoking cessation ranges from 21 days to 42 years with a mean of approximately 5 years. Only 16 % of patients had smoked occasionally since quitting (at least once in a week).

An assessment of the former perception of smoking and motivation to quit revealed that the major negative aspects of smoking related to the decision to stop were : threat to general health (55 %), risk of pulmonary diseases (22 %), nicotine addiction (19 %), nuisance to others (14 %) and indoor air pollution (13 %). (See Table 3.) The most frequently cited motivations to quit were: general concern about health (39 %), specific symptoms (23 %) or clinical signs (22 %), such as cardiovascular or respiratory problems and the feeling that it was the right time to quit (13%). Other motivations (e.g., children, pregnancy, economic burden) were not mentioned frequently. To quantify social pressure to quit, the subjects were asked if they had been blamed for smoking: 45 % had endured some reproach, mainly from household members, parents or friends.

The patients frequently mentioned the following positive effects of smoking cessation: improvement of global health (48 %) and of respiratory or cardiovascular symptoms (32 %). As far as their knowledge on smoking and health, 74 % of patients knew that low-nicotine content ("light") cigarettes are as deleterious to health as regular cigarettes, and 90 % believed that nicotine can be addictive. However, half of them were not aware that the filter does not protect the smoker against the dangers of tobacco smoke. Regarding the role of health professionals, 73 % reported that a physician had asked them about their smoking status, mainly in relationship to past health problems. According to patients' reports, only 30 % of them had physicians who encouraged them to quit. Seventy-eight percent believed that a physician should in principle advise to stop smoking (Table 3), yet only 4 of 88 patients would have expected medical support for their quit attempts.

Table 2. Characteristics of patients at baseline (N=88)

Characteristics	Number
Gender	
men (%)	81
women (%)	19
Age	
mean (yrs)	51
range (yrs)	19 to 81
Origin	
swiss (%)	72
european (%)	18
other (%)	10
Socioeconomic status	
full time work (%)	49
other (%)	51
university or college degree (%)	35
compulsory or secondary school (%)	65
income > 4000 SFr. (%)	67
income < 4000 SFr. (%)	33
Age at initiation	
< age 16 (%)	23
≥ age 16 (%)	76
mean (yrs)	18
range (yrs)	11 to 30
Cigarette consumption (cig/d)	
mean	26
range	2 to 60
Positive aspects of smoking (%)	
relaxation in stress	40
pleasure	23
integration in a group	21
ritual, attitude	10

Table 3. Smoking cessation data (N=88 except * N=86)

Characteristics	Percent
Previous quit attempts	
1-2	64
3-6	23
no previous attempts	13
Abrupt stop	93
Method	
none	83
nicotine substitution	2
other	14
Cessation difficulty	
difficult	70*
easy	30*
Social support	
none	76
family/friends	22
health professional	2
Positive effects of cessation	
global health improvement	48
symptom improvement	32
Motivations to quit	
general health concern	39
specific symptoms	23
specific clinical signs	22
right tme to stop	13
Negative aspects of smoking	
general threat to health	55
risk of pulmonary disease	22
nicotine addiction	17
nuisance to nonsmokers	14
indoor air pollution	13
Social pressure	
blamed	45
never blamed	65
Information level	
light cigarettes less noxious	
yes/no opinion	26
no	74
nicotine addictive	
yes	90
no/no opinion	10
filter offers protection	
yes	52
non/no opinion	48
Physician attitude	
asked about smoking status	
yes	73
no	27
encouraged to quit	
yes	34
no	66
should advise to quit	
yes	78
no	22

4. DISCUSSION

This study has shown that the vast majority of smokers try to stop at least once or twice before they achieve abstinence. Smoking cessation is a dynamic process in which lessons from past, failures and motivations to quit are gradually integrated to enable the addicted smoker to escape a vicious behavioral circle. After failed attempts, a medical intervention is particularly useful to help to the determined quitter. In our sample, virtually all patients reported they stopped abruptly and without medical assistance. This perception might not reflect reality, since previous counseling by general practitionners might have pushed the smoker forward in the sequence of the stages of change (e.g., progressing from precontemplation to contemplation). Furthermore, many patients quit before new therapeutic developments became available. Only 25 % of them reported having received community support during their quit attempt. Thus many of these quitters were alone to cope with withdrawal symptoms, weight gain and mood alterations while being constantly exposed to tobacco through active smokers at home, school or the workplace. This negative social situation, in addition to nicotine dependence, may explain why 70 % of the patients described the cessation process as difficult.

On average, the patients started to smoke at age 18. For this historical cohort who predominately began smoking during the 1970s, the period between adolescence and early adulthood was clearly the age of risk. Almost all patients were in frequent contact with active smokers at the time of initiation, which illustrates the influence of peer pressure in starting to smoke, in addition to social tolerance towards smoking.

As observed in previous studies, the main motivation to quit appears to be mostly related to general or specific concerns about personal health (19). About 10 % stopped smoking because the retail price of cigarettes was too high. The subjective negative aspects of smoking underlying the decision to quit were general or specific threat to health (such as respiratory or cardiovascular diseases and cancer), nicotine addiction, alteration in body odor, changes in indoor air quality, and nuisance to nonsmokers. This sensitive point must be emphasized. The smoker is often pictured as an irresponsible person who selfishly exposes nonsmokers to the dangers of passive smoke. Our data demonstrate that smokers are usually concerned about the impact of their habit on the health of others and this can become a major impetus to stop. This aspect of the smoker's psychology has been frequently omitted from prevention campaigns.

That 65 % of our patients reported not having been blamed for smoking by relatives or peers helps us to understand how implicit social tolerance of tobacco smoke acts as a positive reinforcing message. Furthermore, in this model, passive smoke is accepted as a respect of individual choices.

Our patients were well informed about the deleterious health consequences of smoking. This is probably the result of over 20 years' worth of diffusion of medical knowledge through mass media. However, some discordance was observed on the level of information on the properties of specific tobacco products. Most of the patients knew that low-nicotine cigarettes are as dangerous as regular ones and that nicotine is addictive. But half believed the filter protects the user from health hazards; this belief may be due to marketing by the tobacco industry and the spread of misinformation.

This study demonstrates another interesting feature of current medical practice for tobacco smoking. According to our patients, even if 70 % of physicians questioned them about their smoking status, only 30% of patients ever received cessation advice by health professionals. These figures paint a troubling picture of practitioners who seemed to address this sensitive problem without offering the patients the full range of available treatments. An adequate involvment of health professionals on this important issue could be fostered by postgraduate training sessions and fair compensation for preventive care (21).

Our study main limitations are the small sample size (N = 88) and the high percentage of males. The large proportion of men may represent selection bias if men were more likely to participate in the study than women. However, medical literature is consistent with the fact that female gender is a negative predictor of smoking cessation, which may account for the overrepresentation by males (22,23). Patients with higher educational status were overrepresented in our sample of successful quitters. All the other socioeconomic and demographic characteristics of patients in our sample correlated with those expected from the general medical setting (24).

5. CONCLUSION

Smoking cessation is an individual choice that must follow a critical behavioral change. This choice arises from a gradual awareness of a negative balance between the benefits and harms from tobacco use. This shift in thinking is constantly challenged by a deeply anchored and multifaceted dependence. The 88 former smokers of this sample quitted mostly on their own, after one or more failed attempts, and with very little medical or social support. The predominant motivation to quit was concern about personal health, either general or centered on specific symptoms or clinical signs. This reflects the fact that patients were cognizant of the hazards associated with tobacco use. Most of them described this experience as very or rather difficult. They didn't seek medical help.

There are two important implications of these results. First, patients were not informed of the recent therapeutic developments. Furthermore, health professionals were not adequately involved in cessation programmes and did not provide the full range of current treatment options. Postgraduate training sessions could encourage physician involvement in counseling and preventive activities. Second, the smoker is sensitive to community influence; in this respect, excessive social tolerance to passive smoke facilitates initiation and maintenance of tobacco use. As a major public health objective, abstinence should thus be encouraged by health authorities, medical professionals and community members. This social pressure should strive to dissuade smoking behaviour without discriminating smokers.

6. REFERENCES

1. Peto R, Lopez AD, Boreham J, Thun M, Heath C Jr, Doll R. Mortality from smoking worldwide. Br Med Bull 1996; 52:12-21.

2. Rickenbach M, Wietlisbach V, Beretta-Piccoli C, Moccetti T, Gutzwiller F. MONICA studie 1988-89. Schweiz Med Wochenschr 1993; 123 (suppl. 48): 21-28.

3. Bodenmann A, Ackermann-Liebrich U. Prävalenz Kardiovasculärer Risikofactoren in der Baselstädtischen Bevölkerung 1989-1990. Schweiz Med Wochenschr 1993; 123 (suppl. 48): 38-45.

4. Collishaw N, Lopez A. The tobacco epidemic: a global public health emergency. WHO 1996.

5. Peto R, Lopez AD, Boreham J, Thun M, Heath C Jr. Mortality from smoking in developed countries 1950-2000: indirect estimates from national vital statistics. Oxford, Oxford University Press, 1994.

6. Hammond EC. Smoking in relation to the death rate in one million men and women. in: Haenszel W (eds): Epidemiological approaches to the study of cancer and other chronic diseases. Bethseda, US Department of Health, Education and Welfare, Public Health Service, National Cancer Institute 1966; 127-204.

7. US Department of Health and Human Services. The health benefits of smoking cessation. Rockville, US Department of Health and Human Services, Office on smoking and health, 1990. DHHS Publication No [CDC] 90-8416.

8. Office fédéral de la santé publique. Mortalité due au tabac en Suisse. Bull OFSP 1992; 101-105.

9. Office fédéral de la santé publique, Conférence des directeurs cantonaux des affaires sanitaires, Association tabagisme. La mortalité due au tabac en Suisse. 1989.

10. Fletcher CM, Peto R, Tinker C, Speizer FG. The natural history of chronic bronchitis and emphysema. An eight-year study of chronic obstructive lung disease in working men in London. Oxford, Oxford University Press, 1976

11. Buist AS, Sexton GJ, Nagy JM, Ross BB. The effects of smoking cessation on modification of lung function. Am Rev Respir Dis 1976; 114: 115-122.

12. Cinciripini PM, Hecht SS, Henningfield JE, Manley MW, Kramer BS. Tobacco addiction: implication for treatment and cancer prevention. J Nat Cancer Institute, 1997; 89, no 24, December 17.

13. Benowitz NL. Pharmacologic aspects of cigarette smoking and nicotine addiction. N Engl J Med 1988; 319: 1318-1330.

14. Grüninger U, Meili B. Au cabinet médical: aides et conseils aux fumeurs. Bern, Fédération des médecins suisses et Office fédéral de la santé publique, 1990.

15. Prochaska JO, Goldstein MG. The process of smoking cessation: implications for clinicians. Clin Chest Med 1991; 12: 727-735.

16. Pederson LL, Shelley BB, Ashley MJ, MacDonald JK. Quitting smoking: why, how and what might help. Tobacco control 1996; 5: 209-214.

17. Duncan CL, Cummings SR, Hudes ES, Zahnd E, Coates TJ. Quitting smoking: reasons for quitting and predictors of cessation among medical patients. J Gen Intern Med 1992; 7:398-404

18. Korhonen T, Su S, Korhonen HJ, Uutela A, Puska P. Evaluation of a national quit and win contest: determinants for successful quitting. Preventive Medicine 1997; 26: 556-564.

19. Hymowitz N, Cummings KM, Hyland A, Lynn WR, Pechacek TF, Hartwell TD. Predictors of smoking cessation in a cohort of adult smokers followed for five years. Tobacco Control 1997; 6 (suppl. 2): S57-S62.

20. Haire-Joshu D, Morgan G, Fischer EB Jr. Determinants of cigarette smoking. Clin Chest Med 1991; 12: no 4, December.

21. Cornuz J, Zellweger JP, Mounoud C, Decrey H, Pécoud A, Burnand B. Smoking cessation counseling by residents in an outpatients clinic. Preventive Medicine 1997; 26: 292-296.

22. Berman OB, Gutz ER. Women and smoking: current trends and issues for the 1990's. J Substance Abuse 1991; 3: 221-228.

23. Royce JM, Hymowitz N, Corbett K, Hartwell TD, Orlandi MA for the COMMIT Research Group. Smoking cessation factors among African Americans and Whites. Am J Public Health 1993; 83: 220-226.

24. Wasem YM. Aspects de la dépendance au tabac en pratique de médecine générale; Med Diss Lausanne 1999.

7. APPENDICES

APPENDIX 1

DSM-IV criteria for nicotine dependence (305.10)

A maladaptative pattern of nicotine use, leading to clinically significant impairment or distress, as manifested by three or more of the following, occurring at any time in the same 12-month period:

1. Tolerance as defined by either of the following:
   a. A need to markedly increased amounts of nicotine to achieve desired effect.
   b. A markedly diminished effect with continued use of the same amount of nicotine (i.e. absence of nausea, dizziness and other symptoms of initial nicotine use).
2. Withdrawal as manifested by either of the following:
   a. The characteristic withdrawal syndrome for nicotine.
   b. The same or a closely related substance is taken to relieve or avoid withdrawal symptoms.
3. Nicotine is often taken in larger amounts or over a longer period than was intended.
4. There is a persistent desire or unsuccessful effort to cut down or control substance use.
5. A great deal of time is spent in activities necessary to obtain nicotine or recover from its effects.
6. Important social, occupational, or recreational activities are given up or reduced because of substance use.
7. The substance use is continued despite knowledge of having a persistant or recurrent physical or psychological problem that is likely to have been caused or exacerbated by the substance.
8. Characteristic withdrawal symptoms.
9. Substance often taken to relieve or avoid withdrawal symptoms.

APPENDIX 2

ICD-10 criteria for dependence syndrome (F17.2)

Dependence syndrome is defined by a cluster of behavioral, cognitive and physiological phenomena that develop after repeated use of a psychoactive substance, including at least three of the following:

1. A strong or compulsive desire to take the psychoactive substance.
2. Difficulties in controlling its use (initiation or cessation of consumption or level of use)
3. Characteristic withdrawal syndrome (when lowering or cutting down substance use) or substance consumption to avoid withdrawal symptoms.
4. Increased tolerance to substance effects (a larger amount is needed to achieve desired effect).
5. Higher priority given to substance use than to other activities and interests or increase in time spent to obtain or consume the psychoactive substance or recover from its effects.
6. Persistance in substance use despite appearance of harmful consequences.

APPENDIX 3

Fagerström Test for Nicotine Dependence (FTND)

	FTND	Points
1. How soon after you wake up do you smoke your first cigarette?	within 5 min 6-30 min 31-60 min after 60 min	3 2 1 0
2. Do you find it difficult to refrain from smoking in places where it is forbidden?	yes no	1 0
3. Which cigarette would you hate most to give up?	first in morning any other	1 0
4. How many cigarettes per day do you smoke?	< 10 11-20 21-30 >30	0 1 2 3
5. Do you smoke more frequently during the first hours after waking than during the rest of the day?	yes no	1 0
6. Do you smoke if you are so ill that you are in bed most of the day?	yes no	1 0