

Tobacco cessation in a population over age 15 years: a community-based survey in Alexandria

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الإقلاع عن التدخين عند من تزيد أعمارهم عن 15 عاماً – دراسة مسحية في الإسكندرية

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الخلاصة: في مسح أجري على 2120 شخصاً من البالغين في مدينة الإسكندرية بمصر، تمت دراسة محددات وأنماط الإقلاع عن التدخين بين الأشخاص الذين سبق لهم التدخين. وقد كانت نسبة المدخنين بين إجمالي عدد المستجيبين الذين شاركوا في هذا البحث 30.7٪، أقلع منهم 3.5٪ فقط عن التدخين (معدل الإقلاع عن التدخين هو 11.4٪). ولقد كانت نسبة الإقلاع عن التدخين منخفضة كثيراً لدى من سبق لهم التدخين بانتظام وبشكل يومي (7.5٪) مقارنة بمن كانوا يدخنون أحياناً (44.8٪). ومن بين من يدخنون حالياً، كان 56.3٪ منهم يفكرون ويستعدون للإقلاع عن التدخين، بينما كان 25.1٪ في مرحلة الإقلاع الفعلي عن التدخين، والتي استمرت لنحو 2.5 شهراً قبل العودة مجدداً إلى التدخين. ولقد كان الهاجس الصحي هو الحافز والدافع لدى جميع المدخنين السابقين للإقلاع، ولدى 95٪ من محاولي الإقلاع، بينما كانت الرغبة الملحة للنيكوتين هي أكثر الأسباب شيوعاً وراء العودة للتدخين مرة أخرى. ومن بين العوامل المنبئة بالإقلاع: بدء التدخين في سن متأخرة، قصر فترة التدخين، ظهور مشكلات صحية، والوعي وإدراك فوائد ترك التدخين والإقلاع عنه.

ABSTRACT A survey of 2120 adults in Alexandria, Egypt, studied the determinants and patterns of tobacco cessation among ever smokers. Ever smokers were 30.7% of respondents; only 3.5% had given up smoking (quit ratio of 11.4%). The quit ratio was significantly lower for ex-daily smokers (7.5%) than for ex-occasional smokers (44.8%). Among current smokers, 56.3% were between the contemplation and preparatory phases for quitting, whereas 25.1% were in the action phase of attempting to quit, for an average duration of 2.5 months, before relapsing. Health concerns were the motive for all ex-smokers and 95.0% of attempters, but craving for nicotine was the commonest reason for relapse. Tobacco cessation was predicted by older age of tobacco initiation, shorter duration of use, presence of health problems and a perception of the benefits of quitting.

Le sevrage tabagique dans une population âgée de plus de 15 ans : enquête communautaire à Alexandrie

RÉSUMÉ Une enquête auprès de 2120 adultes à Alexandrie (Égypte) a permis d'étudier les déterminants et les caractéristiques du sevrage tabagique chez des personnes ayant fumé à un moment de leur existence. Celles-ci représentaient 30,7 % des sujets enquêtés ; seulement 3,5 % avaient cessé de fumer (taux d'abandon de 11,4 %). Le taux d'abandon était significativement plus faible pour les ex-fumeurs quotidiens (7,5 %) que pour les ex-fumeurs occasionnels (44,8 %). Parmi les fumeurs au moment de l'étude, 56,3 % se trouvaient entre les phases où ils envisageaient d'arrêter de fumer et où ils s'y préparaient, tandis que 25,1 % en étaient à l'action d'essayer d'arrêter de fumer, sur une durée moyenne de 2,5 mois, avant de rechuter. Les préoccupations de santé constituaient les motifs communs à tous les ex-fumeurs et à 95,0 % des personnes qui essayaient d'arrêter de fumer, mais le besoin impérieux de nicotine était la raison la plus courante de rechute. Les facteurs prédictifs du sevrage tabagique étaient l'initiation au tabagisme à un âge plus tardif, la plus courte durée de la consommation tabagique, la présence de problèmes de santé et la perception des avantages de ne pas fumer.

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Introduction

Tobacco products have no safe level of consumption. Tobacco is the only legal consumer product that causes ill health and premature death when used exactly as the manufacturer intends [1,2]. Most people know that tobacco is hazardous but few appreciate how hazardous it really is [2,3]. Tens of thousands of studies have documented the association between cigarette smoking and a large number of serious and fatal diseases affecting almost all body systems [2,4]. The lifetime risk of a smoker being killed by the use of tobacco products is at least 50%. Therefore, a lifelong smoker is more likely to die as a direct result of tobacco use than from all other potential causes of death combined [2,3]. It is now reasonable to claim that tobacco use represents the most extensively documented cause of ill health ever investigated in the history of biomedical research [4].

Quitting smoking has major and immediate benefits for smokers of all ages, benefits that accrue to those who already have smoking-related diseases as well as to those who do not. At any age, smoking cessation reduces the overall risk of death; however, the reduction of risk occurs more quickly for some diseases than others [4,5]. One year after quitting, the risk of coronary heart diseases decreases by 50% and within 15 years the associated risk of dying for an ex-smoker approaches that of a never smoker. Moreover, the risk of developing stroke, chronic obstructive lung diseases and lung cancer also decreases but more slowly [6].

Smoking cessation falls under the category of primary prevention, as does the prevention of initiation [4]. Indeed, smoking cessation meets the definition of primary prevention by reducing the risk of morbidity and mortality in asymptomatic

people. The considerable evidence of the benefits of tobacco cessation prompted the study of ever smokers in Alexandria, Egypt, the aim being to determine the rate of tobacco cessation in a representative sample of the population, the motives for cessation, and the determinants of tobacco cessation and attempts to quit.

Methods

A comprehensive community-based tobacco survey was conducted in Alexandria city between May and August 2000. The World Health Organization (WHO) modified cluster sample survey was adopted to enrol 2120 subjects aged 15 years and over. Further details of the sampling methods and questionnaire have been reported in earlier papers [7,8].

Data were collected using a pre-tested, pre-coded interview questionnaire in 4 sections: participants' demographic characteristics and level of physical activity; participants' pattern of tobacco use and attempts to quit; participants' knowledge of tobacco-associated morbidity; and participants' perceptions of the dangers of smoking, smokers' susceptibility to health problems and potential benefits of refraining from tobacco use [8].

The WHO core questions for tobacco surveys were used to classify the smoking status of participants into current smoker or ex-smokers (minimum duration of tobacco cessation 3 months), and daily or occasional smokers [9].

The prevalence and the corresponding 95% confidence interval (CI) as well as the mean, standard deviation (SD) and the 95% CI of the mean were computed. The chi-squared and Student *t*-test were used to test the significance of the obtained results. Tobacco cessation was modelled as a func-

tion of participants' characteristics, pattern of tobacco use as well as their knowledge and perceptions.

Results

Ever-use of tobacco products was reported by 651 respondents (30.7%). The proportion of ever daily smokers (27.5%; 95% CI: 25.60–29.40) was significantly higher than that of ever occasional smokers (3.2%; 95% CI: 2.45–3.95). At the time of the survey, 577 respondents (27.2%; 95% CI: 25.31–29.09) were current smokers and only 74 (3.5%; 95% CI: 2.72–4.28) were ex-smokers.

The quit ratio, the ratio of ex-smokers to ever smokers, was 11.4% (95% CI: 8.92–13.79). This was significantly lower for ex-daily smokers (7.5%; 95% CI: 5.39–9.67) than for ex-occasional smokers (44.8%; 95% CI: 32.86–65.67). Ex-smokers had abstained for a mean (SD) duration of 4.07 (3.34) years, range 0.25–18.00. The majority of ex-smokers (82.4%) had successfully given up for 1 year or more whereas 17.6% had refrained for smoking for less than 1 year. The majority of ex-smokers stated perceived poor health (63.5%) and the fear of tobacco-related diseases (35.1%) as the main reason for quitting smoking. In only 1 ex-smoker (1.4%) the motive for giving up smoking was suffering from heart disease.

Table 1 compares the demographic and health characteristics of ex-smokers with current smokers; both were comparable in all respects except for age and existing health problems. Ex-smokers were significantly younger than current smokers: mean (SD) age 35.2 (13.1) years versus 39.3 (12.3) years ($t = 2.51$, $P = 0.012$). In the age group between 25 to < 45 years, the proportion of ex-smokers (52.8%) was higher than current smokers (47.7%),

whereas among those aged 45+ years the proportion of current smokers (36.9%) was higher than that of ex-smokers (22.9%). These differences were significant statistically ($P = 0.024$) (Table 1). A significantly higher percentage of ex-smokers (17.6%) reported enduring a chronic health problem (chronic bronchitis, hypertension, heart disease or diabetes) compared with current smokers (9.9%) ($P = 0.044$) (Table 1).

Table 2 indicates that ex-smokers started using tobacco at a significantly older age than current smokers [mean (SD) age 18.2 (4.0) years versus 20.5 (6.9)] ($P < 0.0001$) and continued to be tobacco users for a significantly shorter time [mean (SD) 21.1 (12.9) years versus 10.6 (10.1)] ($P < 0.0001$).

Regarding knowledge of tobacco-related morbidity, the scores of ex-smokers and current smokers were identical (Table 3). On the perceptions scale, ex-smokers scored higher on the perception of dangers associated with tobacco use, susceptibility to tobacco-related morbidity as well as the benefits of cessation; however, the differences were not statistically significant.

Tobacco cessation was modelled as a function of participants' demographic characteristics, pattern of tobacco use and knowledge and perceptions about smoking (Table 4). Quitting smoking was predicted by participants' marital status, age of initiation and duration of tobacco use, presence of chronic health problems and the perceptions of benefits associated with never starting to smoke or giving up smoking. This model correctly classified 89.3% of ex-smokers.

Among current smokers, 145 (25.1%) reported having attempted to give up smoking. The mean (SD) number of attempts was 2.67 (1.81) (range 1–12). Fear of tobacco-related morbidity was the motive in

Table 1 Demographic and health characteristics of current and ex-smokers in Alexandria, Egypt

Characteristic	Current smokers (n = 577)		Ex-smokers (n = 74)		χ^2 -value	P-value
	No.	%	No.	%		
Sex						
Men	563	97.6	70	94.6	$\chi^2_1 = 2.17$	0.141
Women	14	2.4	4	5.4		
Age (years)						
< 25	88	15.4	13	24.3	$\chi^2_2 = 7.44$	0.024
25– < 45	274	47.7	39	52.8		
45+	215	36.9	17	22.9		
Education						
Illiterate/read and write	293	50.8	40	54.1	$\chi^2_3 = 0.75$	0.862
Primary/preparatory	80	13.8	10	13.5		
Secondary	130	22.6	17	22.9		
University/higher	74	12.8	7	9.5		
Occupation^a						
	(n = 482)		(n = 60)			
Professional/ semiprofessional	65	13.6	5	8.3	$\chi^2_2 = 1.31$	0.518
Skilled/semiskilled	56	11.6	8	13.3		
Manual/other ^b	361	74.8	47	78.4		
Marital status^c						
	(n = 543)		(n = 69)			
Unmarried ^d	113	20.8	20	29.0	$\chi^2_1 = 2.41$	0.120
Married	430	79.2	49	71.0		
Chronic health problems						
Absent	520	90.1	61	82.4	$\chi^2_1 = 4.04$	0.044
Present	57	9.9	13	17.6		
Physical exercise						
Sedentary/light	536	92.9	70	94.6	$\chi^2_1 = 0.29$	0.587
Moderate/vigorous	41	7.1	4	5.4		

^aApplicable to those who were employed at the time of the survey.

^bOthers includes drivers, traders and fishermen.

^cNot applicable to students and those below the age 18 years.

^dUnmarried includes never married, divorced, separated, widows and widowers.

48.6% of participants, followed by perceived poor health (40.0%) or suffering a chronic disease aggravated by tobacco use (e.g. chronic bronchitis, hypertension, heart disease and diabetes) (6.4%). For only a few respondents, the motive for quitting was to protect their family from passive exposure to smoke (2.9%) and the

rising cost of tobacco (2.1%). At each attempt, they had given up tobacco for a mean (SD) duration of 2.6 (1.92) months, range 0.40–10, followed by a relapse. The main reason for the relapse, given by nearly two-thirds of the attempters (64.2%) was a craving for nicotine. Other reasons were experiencing a personal problem (19.3%),

Table 2 Age of initiation and duration of tobacco use of current and ex-smokers

Initiation/duration of tobacco use	Current smokers (n = 577)	Ex-smokers (n = 74)	t-value	P-value
<i>Age of initiation (years)</i>				
Mean (SD)	18.21 (4.04)	20.50 (6.94)	t = 4.14	< 0.0001
Min–Max	10–36	10–50		
95% CI	17.88–18.54	18.89–22.11		
<i>Duration of tobacco use (years)</i>				
Mean (SD)	21.06 (12.86)	10.59 (10.11)	t = 6.73	< 0.0001
Min–Max	1–50	0.17–46		
95% CI	20.00–22.11	8.24–12.93		

n = total number of respondents.

SD = standard deviation.

CI = confidence interval.

boredom and loneliness (12.4%) or frustration (4.1%).

Current smokers who had ever attempted to give up were had similar characteris-

tics to those who had not attempted to give up smoking in terms of age, sex, level of education, occupation and marital status (Table 5). In addition, no significant differ-

Table 3 Knowledge and perceptions about the health risks of smoking of current and ex-smokers

Knowledge and perceptions	Current smokers (n = 577)	Ex-smokers (n = 74)	t-value	P-value
<i>Knowledge about health effects</i>				
Mean (SD) score	24.96 (6.97)	24.81 (6.80)	0.17	0.860
Min–Max	14–42	14–42		
<i>Perception of dangers of smoking</i>				
Mean (SD) score	9.64 (3.45)	10.12 (3.12)	1.12	0.262
Min–Max	0–14	4–14		
<i>Perception of susceptibility to illness score</i>				
Mean (SD) score	6.86 (2.39)	7.27 (2.15)	1.41	0.159
Min–Max	0–10	4–10		
<i>Perception of benefits of not smoking</i>				
Mean (SD) score	9.54 (3.42)	10.31 (3.11)	1.83	0.068
Min–Max	0–14	5–14		

n = total number of respondents.

SD = standard deviation.

Table 4 Independent predictors of tobacco cessation of ex-smokers

Independent predictor	Coefficient	Standard error	Adjusted OR	95% CI	P-value
<i>Health problems</i>					
Absent ^a					
Present	1.13	0.402	3.11	1.41–6.83	0.0048
<i>Marital status</i>					
Married ^a					
Unmarried ^b	0.758	0.345	2.13	1.08–4.19	0.0280
<i>Duration of tobacco use</i>					
	–0.110	0.018	0.89	0.86–0.92	< 0.0001
<i>Perception of benefits of not smoking</i>					
	0.088	0.041	1.09	1.01–1.18	0.0322
<i>Age of initiation</i>					
	0.060	0.028	1.06	1.01–1.21	0.0315

OR = odds ratio.

CI = confidence interval.

^aReference category.

^bUnmarried include never married, divorced, separated, widows and widowers.

ences were detected between the 2 groups in relation to health problems or the level of physical activity.

Table 6 shows that current smokers who had attempted to quit smoking were comparable to those who had not tried to quit in respect of their smoking status. Both groups initiated the habit around the age of 18 years, continued to be tobacco users for a similar duration and smoked nearly the same number of cigarettes.

The mean scores of current smokers who ever attempted tobacco cessation on the knowledge scale as well as on the perception of benefits scale was comparable with their counterparts who reported never trying to quit. However, those who had attempted tobacco cessation had significantly higher scores on the perception of danger scale: mean (SD) score 10.18 (3.37) versus 9.47 (3.46) ($P = 0.032$). They also had higher scores on the perception of susceptibility scale: mean (SD) score 7.20 (2.31) versus 6.75 (2.40) ($P = 0.047$) (Table 7).

The health warning on cigarette packets was seen as a motivation to stop smoking for significantly more current smokers who attempted to quit smoking than for those who had never attempted to quit (50.3% versus 38.9%; $P = 0.016$) (Table 8). Moreover, a significantly higher percentage of current smokers who attempted to give up (34.5%) had received advice from a medical professional to quit the habit ($P = 0.012$). More current smokers who suffer chronic health problems had been advised by a doctor to quit (59.6%) than healthy current smokers (22.9%) ($P < 0.0001$).

Regarding patterns of tobacco use, half of the current smokers (51.3%) smoked the same number of cigarettes as the previous year, whereas 30.0% reported smoking less and 18.7% reported smoking more than the previous year. No significant difference in the pattern of tobacco use was observed between those who attempted to quit smoking and those who did not (Table 8). More than half of current smokers

Table 5 Demographic and health characteristics of current smokers in relation to previous cessation attempts

Characteristic	Previous attempt		χ^2 -value	P-value
	No (n = 432) No. %	Yes (n = 145) No. %		
Sex				
Men	423 97.9	140 96.6	$\chi^2_1 = 0.85$	0.355
Women	9 2.1	5 3.4		
Age (years)				
< 35	157 36.3	58 40.0	$\chi^2_2 = 1.08$	0.584
35– < 55	215 49.8	71 49.0		
55+	60 13.9	16 11.0		
Education				
Illiterate/read and write	210 48.6	83 57.3	$\chi^2_3 = 3.45$	0.326
Primary/preparatory	63 14.6	17 11.7		
Secondary	100 23.1	30 20.7		
University/higher	59 13.7	15 10.3		
Occupation^a				
	(n = 355)	(n = 127)		
Professional/ semiprofessional	50 14.1	15 11.8	$\chi^2_2 = 1.40$	0.497
Skilled/semiskilled	44 12.4	12 9.5		
Manual/other ^b	261 73.5	100 78.7		
Marital status^c				
	(n = 406)	(n = 137)		
Unmarried ^d	88 21.7	25 18.2	$\chi^2_1 = 0.73$	0.392
Married	318 78.3	112 81.8		
Chronic health problems				
Absent	392 90.7	128 88.3	$\chi^2_1 = 0.74$	0.389
Present	40 9.3	17 11.7		
Physical exercise				
Sedentary/light	403 93.3	133 91.7	$\chi^2_1 = 0.40$	0.526
Moderate/vigorous	29 6.7	12 8.3		

^aApplicable to those who were employed at the time of the survey.

^bOthers include drivers, traders and fishermen.

^cExcluding students and those below the age of 18 years.

^dUnmarried includes never married, divorced, separated, widows and widowers.

n = total number of respondents.

(56.3%) expected they would give up in the next 5 years. Indeed, a significantly higher percentage of current smokers who had attempted to give up smoking (63.4%) expected that they would quit in the next 5 years compared with those who had not attempted to give up (53.9%) ($P = 0.046$).

Discussion

The total prevalence of tobacco use in a population is the net product of the two opposing forces of initiation and cessation. In any population, health awareness generally starts with the utilization of curative

Table 6 Pattern of tobacco use of current smokers in relation to previous cessation attempts

Pattern of tobacco use	Previous attempt		χ^2 and <i>t</i> -value	P-value		
	No (n = 432)	Yes (n = 145)				
<i>Smoking status (No. & %)</i>						
Daily smoker	407	94.2	133	91.7	$\chi^2_1 = 1.21$	0.290
Occasional smoker	25	5.8	12	8.3		
<i>Age of initiation (years)</i>						
Mean (SD)	18.14 (3.98)	18.43 (4.24)			<i>t</i> = 0.74	0.462
Min–Max	10–35	10–36				
<i>Duration of tobacco use (years)</i>						
Mean (SD)	21.47 (12.83)	19.83 (12.91)			<i>t</i> = 1.34	0.182
Min–Max	1–50	1–50				
<i>Number of cigarettes smoked (per day)</i>						
Mean (SD)	23.66 (12.51)	21.80 (12.55)			<i>t</i> = 1.55	0.122
Min–Max	0.28–60	0.28–60				

n = total number of respondents.
SD = standard deviation.

Table 7 Knowledge and perceptions about the health risks of smoking of current smokers in relation to previous cessation attempts

Knowledge and perceptions	Previous attempt		<i>t</i> -value	P-value
	No (n = 432)	Yes (n = 145)		
<i>Knowledge about health effects</i>				
Mean (SD) score	25.15 (6.99)	24.37 (6.88)	1.16	0.245
Min–Max	14–42	14–42		
<i>Perception of dangers of smoking</i>				
Mean (SD) score	9.47 (3.46)	10.18 (3.37)	2.15	0.032
Min–Max	0–14	2–14		
<i>Perception of susceptibility to illness</i>				
Mean (SD) score	6.75 (2.40)	7.20 (2.31)	1.99	0.047
Min–Max	0–10	3–10		
<i>Perception of benefits of not smoking</i>				
Mean (SD) score	9.41 (3.43)	9.97 (3.33)	1.73	0.083
Min–Max	0–14	3–14		

n = total number of respondents.
SD = standard deviation.

Table 8 Motivations for quitting and future intentions to quit of current smokers in relation to previous cessation attempts

Motivations	Previous attempt		χ^2 -value	P-value
	No (n = 432) No. %	Yes (n = 145) No. %		
<i>Ever received medical advice to quit smoking</i>				
No	329 76.2	95 65.5	$\chi^2_1 = 6.30$	0.012
Yes	103 23.8	50 34.5		
<i>Felt motivated to quit by health warnings on packet</i>				
No	264 61.1	72 49.7	$\chi^2_1 = 5.86$	0.016
Yes	168 38.9	73 50.3		
<i>Extent of tobacco use in previous year</i>				
Not changed	215 49.8	81 56.6	$\chi^2_2 = 2.65$	0.266
Smoked more	87 20.1	21 14.5		
Smoked less	130 30.1	43 29.7		
<i>Expected tobacco use in next 5 years</i>				
Continue to smoke	199 46.1	53 36.6	$\chi^2_1 = 3.99$	0.046
Quit smoking	233 53.9	92 63.4		

n = total number of respondents.

services and then the preventive ones. Applying this to tobacco use implies that cessation rates will increase before any decline in the rates of initiation.

The presence of organized tobacco cessation programmes enhances quitting [4]. However, most people who quit smoking do so on their own without aids such as cessation clinics or nicotine gum [10]. In the current survey, 11.4% of ever smokers had successfully achieved tobacco cessation on their own without the use of aids such as nicotine patches or smoking cessation programmes. This rate is slightly higher than the 9.5% reported from China [11] but lower than 15% from Denmark [12]. The differential in the quit ratio by previous smoking status—7.5% for ex-daily smokers and 44.8% for ex-occasional smokers—is in accordance with previous findings [13,14] and identical with figures reported by Sargent et al. [14].

Our study confirms previous studies that have documented the relation between a higher tendency to quit smoking and older age of starting smoking [15–17] as well as shorter duration of use [18]. This is likely to be due to a lower level of nicotine dependence, as the risk of dependency increases with earlier age of initiation [19].

Controversy exists about the most likely age for tobacco cessation. Several studies have reported a higher quit ratio in older age groups [12,20,21]. This disagrees with the present survey, where ex-smokers were significantly younger than those who continued to smoke. Our finding supports the 1990 Surgeon General's report in the

ers—is in accordance with previous findings [13,14] and identical with figures reported by Sargent et al. [14].

United States of America (USA), which postulated that highly motivated smokers might have already quit smoking at a younger age, leaving a relatively “hard-core” group of older smokers [4]. This finding can also be attributed to a misconception among older smokers that any health damage accrued from smoking is irreversible after decades of smoking. Research shows that it is never too late to quit and there are benefits to health no matter what age a person quits [4,6].

Tobacco cessation is a complex process that passes through different phases. The model of behaviour change described by Prochaska and Diclemente is a cycle, which starts with the pre-contemplation phase when an individual is not yet thinking about behaviour change [22]. In the contemplation phase a smoker begins to evaluate the pros and cons of quitting, and this is followed by the preparation phase when the smoker takes the decision to quit and sets a plan to achieve it. The action phase starts with attempts to quit, ultimately followed by a sustained state of abstinence.

In our sample of current smokers, about 44% did not intend to quit in the next 5 years and presumably are in the pre-contemplation phase. This figure is almost identical to that reported in studies from Switzerland [23] and the USA [24]. On the other hand, nearly 56% expressed an intention to quit in the next 5 years and they must be somewhere between the contemplation and preparation phases. This figure is much higher than that reported from China [11], the USA [25] and Switzerland [23]. This finding may be a promising precursor to a reduction of smoking prevalence in Egypt in the near future.

In our study, the action phase is represented by the 17.6% of the sample who were recent ex-smokers (who had abstained for less than 1 year) and the 25.1%

of current smokers who had attempted to give up. The attempters had made on average 2.5 attempts to quit and had refrained for a variable time before relapsing, principally due to a craving for nicotine. However, relapse should not be perceived as failure but as part of the cessation cycle. In most cases, early attempts at quitting lead to relapse due to withdrawal symptoms and the smoker typically progresses through stages of ambivalence and readiness to stop before finally succeeding with cessation and becoming a permanent ex-smoker [26]. As attempting to quit, rather than intending to quit, predicts ultimate success in tobacco cessation [12], it is essential to understand this process and support those attempting to quit to achieve the desired behaviour.

Considering the motivational factors, it is clear that health concerns, namely fear of tobacco-related morbidity and perceived poor health, are the greatest impetus for quitting and attempting to quit smoking in this survey as well as others [10–12]. This illustrates how strong is the addiction to tobacco, so that attempting and maintaining a state of abstinence needs a sustained personal effort. Further evidence for this is the significantly higher proportion of those with chronic health problems among ex-smokers compared with current smokers. In this study, medical advice was an efficient trigger to attempting to give up, but actual experience of ill health provided a greater motivation for smokers to transfer to the action phase of quitting.

Most theories of behaviour assume that knowledge is a necessary, but not sufficient condition, for behavioural change. There is no better example of this than the individuals who continue to smoke despite being aware of the risk they face [27]. In our sample of ever smokers, knowledge about the health problems associated with

tobacco use was the same for smokers who had attempted and those who had not attempted to quit. However, there were differences in perceptions of smoking risks between the groups. This is logical since perception is a more enduring state and a more powerful influence on behaviour than knowledge. Those who attempted to quit were more likely to believe in the dangers of tobacco use as well as their own susceptibility to adverse health effects compared with those who did not attempt to quit. Attempters were more likely to admit that the health warning on cigarette packets motivated them to quit. In contrast, ex-smokers were more likely to believe in the benefits associated with giving up smoking.

Our findings provide evidence that smokers can achieve tobacco cessation on their own if they are motivated to do so. Since health concerns were the main motivational factor, health education programmes should stress the adverse consequences of tobacco on health by exemplifying the dangers a smoker faces, before shifting to illustrate the benefits of cessation at any age. This follows smokers along the path of the cessation process. Relapses resulting from the craving for nicotine should be expected, particularly among those who are heavily dependent on tobacco, who need encouragement to con-

tinue trying until they succeed. A later age of starting smoking has a major effect on future cessation, as late initiators are less dependent on nicotine and more likely to renounce smoking after a short duration. Physicians are the most trusted source of antismoking messages [27], and the one-to-one encounter in the physician's office was shown in this study to be an important motivation for those attempting cessation. However, physicians need to advise all their patients who smoke, not only those with health problems aggravated by smoking. Quitting smoking reduces mortality within just a few years, while preventing initiation does not influence mortality statistics until some 30 to 50 years later, when young people reach the age when smoking-related morbidity affects them [9]. There can be no debate about the need to emphasize smoking cessation activities as well as prevention of initiation of the habit. Further research on people who never smoked daily is essential for determining what factors prevented them from becoming regular smokers.

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