Determinants of smoking and cessation in older women

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Abstract

Background: although the benefits of quitting smoking even at an advanced age have been proved, few campaigns target the older population. The goals of this study were to analyse the characteristics of older women smokers to help and support those wanting to quit.
Methods: we assessed the determinants of smoking cessation in a prospective cohort study performed in 7,609 older women. A questionnaire about smoking habits was sent to the 486 eligible smokers. Smoking dependence and smokers' readiness to quit was assessed. Participants who had quit smoking during follow-up were asked about their previous reasons for quitting and the methods used to quit.
Results: 372 women of the 424 (88%) responded to our questionnaire and were included. The most common reasons for smoking were relaxation, pleasure, and habit. Major obstacles to quitting smoking were 'no benefit to quitting at an advanced age', 'smoking few or "light" cigarettes yields no negative health consequences', and 'smoking does not increase osteoporotic risk'. During the 3-year follow-up period, 57 of the 372 (15%) women successfully quit smoking. Being an occasional smoker (OR = 2.4) and reporting 'quitting is not difficult' (OR = 3.7) were positively associated with having recently quit smoking. Only 11% of successful cessations were reported to have received physician advice.
Conclusions: these data illustrate the specific smoking behaviour of older women, suggesting that cessation interventions ought to be tailored to these characteristics. Willingness to quit was associated with a low education level. The most frequent obstacles to quitting were all based on incorrect information.

Keywords: *smoking, older women, smoking cessation, elderly*

Introduction

Tobacco smoking is the number one preventable risk factor in seven of the 14 primary causes of death in people aged 65 years and older [1]. The specific medical consequences of smoking for older women are well known and have already been described. They include cancer, chronic obstructive pulmonary disease (COPD), cardiovascular disease, osteoporosis, peptic ulcer, decrease in quality of life, decrease in physical functioning, and interference with other drugs [2–10]. Older tobacco users have nearly double the mortality rate of non-smokers (OR of 2.1 for men, 1.8 for women) [2]. Among these, deaths due to lung cancer and COPD exceed those that are cardiovascular related [11]. Several studies have shown evidence of cardiovascular and respiratory benefit from quitting smoking, even at an advanced age [8, 11, 12].

A high percentage of older smokers want to quit, and smokers over 65 are more likely to be successful at quitting and less likely to relapse than younger smokers [11, 13–15]. However, the older smokers are often not encouraged to quit [3, 16], even though a significant increase in cessation rates after a brief physician intervention has been demonstrated in several studies [17–21]. Many physicians may think it is too late to intervene and therefore rarely tackle the subject. Older smokers often have long smoking histories, marked by strong nicotine dependence, previous unsuccessful quitting attempts, and doubts about the benefits of quitting [19]. Data from western countries have estimated smoking prevalence among older women to be between 8% and 12% [4].

An analysis of the smoking profile of older female smokers could be a useful tool to help and support older women who want to quit. We therefore assessed the determinants of smoking and smoking cessation in a prospective cohort study, the Swiss Study for the Evaluation of the Methods of Measurement of Osteoporotic Fracture Risk. This study, which includes 7,609 older women, aims to evaluate various methods of measuring osteoporosis risk fracture. Smoking prevalence in the cohort is similar to the source population of older Swiss women (i.e. 7%) [22]. The specific objectives of this study were to analyse the characteristics of older women smokers regarding tobacco consumption, level of tobacco dependence, readiness to quit smoking, and reasons for continuing smoking, as well as to determine the characteristics of women who have recently quit.

Methods

The study population consisted of older women aged 70 and above, who were physically independent and living in Switzerland. Exclusion criteria included a diagnosis of dementia, active cancer, kidney insufficiency, or bilateral hip prosthesis. From the initial questionnaire used to collect data on risk factors for osteoporotic fractures, current occasional or regular cigarette smoking was reported by 7% (539/7609) of the cohort. A pre-tested, four-page additional questionnaire characterising smoking habits was sent to these smokers. In addition, participants who had quit smoking during the follow-up were asked about their previous smoking patterns, reasons for quitting, and methods used. The majority of questions were multiple-choice and based on a questionnaire used in our previous studies assessing smoking behaviour [23, 24].

Smoking dependence was gauged with the heavy smoking index (HSI) derivate from the Fagerström test for nicotine dependence (FTND) and assessed the following: (i) the number of minutes after waking up before smoking the first cigarette of the day, and (ii) the number of cigarettes smoked per day [25, 26]. Responses to both questions were given a score ranging from 0 (low) to 3 (high); these two scores were added to yield a total dependency score ranging from 0 (low) to 6 (high). Using this score, the level of nicotine dependence was characterised as low (0–2 points), moderate (3–4 points), or high (5–6 points). A dichotomous division of low versus moderate/high dependencies was used in the statistical models because of the relatively few individuals in the latter categories.

The stages-of-change model from Prochaska was used to categorise smokers' readiness to quit [27, 28]. Participants were classified into the following stages: precontemplation (not considering quitting), contemplation (considering stopping within the next 6 months, but still ambivalent), and preparation (planning to quit within the next month). Because few smokers were identified as being in the contemplation or preparation stages, these two groups were merged into a 'non-precontemplation' category for the analysis.

Of the 539 women, 53 (10%) were excluded because of moving without leaving the new address ($n = 8$), dementia ($n = 1$), giving up ($n = 21$), or death during follow-up ($n = 23$). The remaining 486 participants received a mailed questionnaire on their smoking habits, and 424 were returned, giving a response rate of 87%. Fifty-two of these forms contained incomplete data and were not used in the analysis. A total of 372 women were eventually included in the final analysis.

Stata 7.0 was used for statistical analysis. T-tests and chi-square tests were used to compare means. Logistic regression was performed to characterise the women who stopped smoking during the follow-up and those who continued smoking but indicated a willingness to quit in the near future.

Results

At baseline, the 372 smokers had a mean [±standard deviation (SD)] age of 74.5 years (±3.1), 13% reported a high-level education, and 57% had previously worked in a white-collar profession. Their mean (±SD) body mass index (BMI) was 24.2 (±4.3). Almost two-thirds (61%) described their health status as 'good' or 'very good', and 53% reported having at least one medical condition, including high blood pressure, deep venous thrombosis, or lung disease.

Table 1 shows the subjects' baseline characteristics regarding smoking behaviour. They had smoked for an

Table 1. Smoking characteristics of older women

Characteristic	
Smoking consumption (%)	
≤10 cigarettes/day	53
11–20 cigarettes/day	38
21–30 cigarettes/day	8
>30 cigarettes/day	1
Preferred type of cigarette (%)	–
Light	74
Moderate	22
Heavy	4
Reasons to smoke[a] (%)	–
Relaxation	55
Pleasure	33
Habit	30
Well-being	17
Something to do	14
Mental stimulation	12
Time to first cigarette after waking up (%)	–
Within 5 min	5
6–30 min	22
31–60 min	31
More than 60 min	42
Level of dependence (%)	–
Low	78
Moderate/high	22
Number of years since starting smoking (mean ±SD)	51.4 (±10.3)
Willingness to quit (%)	61
Quit attempt in the past year	34

[a]Percentages add up to >100 because multiple responses were permitted.

Table 2. Predictors of quitting smoking at enrolment (*N* = 217)

	OR	95% confidence intervals (CIs)
Smoking initiation after 25 years of age	3.48	(1.87, 6.48)
Low education level	2.59	(0.92, 7.26)
Quit attempt in the past year	2.63	(1.39, 4.98)
Belief that it is 'difficult' or 'very difficult' to quit	3.44	(1.50, 7.88)
Preference for 'light' cigarettes	0.50	(0.25, 1.00)

NB: age, profession, smoking dependence, state of health and number of cigarette were not associated with the desire to quit.

average of 51 years and their mean daily consumption (±SD) was 12 (±8) cigarettes. The most commonly reported reasons for smoking were relaxation (55%), pleasure (33%), and habit (30%). Most women were light smokers, at just over half smoked 1–10 cigarettes per day and nearly two-fifths smoked 11–20 cigarettes per day. Approximately three quarters of the women preferred 'light' cigarettes, and over two-fifths waited over an hour after waking up before having the first cigarette of the day. In contrast, only 5% of the women consumed their first cigarette within 5 min of waking up. A large majority (78%) were characterised as having a low nicotine dependence, and a third had made an attempt to quit in the past year. The most frequently cited rationales for not quitting were 'no benefit to quitting at an advanced age', 'smoking few or "light" cigarettes yields no negative health consequences', and 'smoking does not increase osteoporotic risk'.

Table 2 shows the results of the multivariate analyses assessing the characteristics of smokers planning to quit. Such a willingness was positively associated with beginning tobacco use after 25 years of age [odds ratio (OR) = 3.48], not having received a college education (OR = 2.59), having made a previous quit attempt in the past year (OR = 2.63), and believing that it is difficult to quit (OR = 3.44), while a preference for light cigarettes was negatively associated with a desire to quit smoking (OR = 0.50).

During the 3-year follow-up period, 57 of the 372 (15%) women successfully quit smoking. A regression model was performed to characterise those women. 'Being an occasional smoker' (<1 cigarette per day) (OR = 2.4) and reporting 'quitting is not difficult' (OR = 3.7) were positively associated with having recently quit smoking.

Discussion

This study of older female smokers provides information about this population's smoking profile, cessation rate, and motivations and methods to quit. To our knowledge, this information has not been widely reported by other investigators and these data thus provide insight into the specific smoking behaviours of this population.

The prevalence of smoking in our study population was in concordance with that found in other western populations

[4]. We also confirmed that there are, on average, fewer smokers among the older population.

Our results show that the smoking habits of older women differ from those of the general population, suggesting that cessation interventions ought to be tailored to these characteristics. For example, these women smoked an average of 12 cigarettes a day with a preference for so-called light cigarettes. It is difficult to interpret the fact that the major cited reason for smoking was 'relaxation'. One explanation lies in the fact that smoking is partly a social behaviour. Our data also suggest a low level of physician intervention; only 11% of successful cessations were reported to be the result of physician advice. Furthermore, three-quarters of women who stopped during the follow-up period reported quitting of their own accord. However, it is not clear whether this reliance on self-motivation results from physician failure to adequately address the benefits of cessation or manifests because the act of quitting rests primarily on the smoker's own willpower rather than on outside influences such as her physician.

Interestingly, two-fifths of respondents mentioned a desire to quit, and this willingness to quit was positively associated with a low education level. As expected, preference for light cigarettes was negatively associated with a desire to quit smoking (OR = 0.50).

The most frequent obstacles to quitting (believing that there is no benefit to quitting at an advanced age, that smoking few or 'light' cigarettes yields no negative health consequences, and that smoking does not increase osteoporotic risk) were all based on incorrect information. Disseminating accurate health information to older women could significantly affect their readiness to quit and the success of future attempts to quit. Increasing health knowledge is particularly important for this population, as many of these women do not make a serious attempt to quit until they are sick.

This study had some limitations. Although the study design did not intentionally encourage smokers to quit, there may have been a treatment effect leading to a higher quit rate than that found in an exterior population. Any new smokers initiating tobacco use after the start of the study were not included in the analysis, although we do not believe this would have significantly changed our conclusions. Another potential limitation is that exclusion criteria used in the selection of the Semof population may lead to a small selection bias. However, the Semof population was previously compared with the age-matched Swiss general population [29]. The prevalence of smoking (8% versus 7%, respectively), of hysterectomy (23% versus 21%) and the median BMI (25.5 versus 25.2 kg/m^2) were similar. These comparisons suggest that the Semof population is similar to the source population. Furthermore, the age at the menopause and the proportion of natural menopause were concordant with previous data [30].

In spite of these limitations, our results indicate many women in this group smoke relatively few cigarettes per day, gravitate towards the 'light' brands, and initiated smoking before the age of 25. A significant proportion say they would

like to quit. Those who were able to quit during the follow-up period smoked fewer cigarettes per day and had started smoking at a later age, compared with those who did not quit. Older women are not well informed about the health risks of smoking and the benefits of quitting, even at an advanced age. Older women are a group often overlooked in tobacco control, and efforts should be made to tailor interventions appropriately to this group.

Key points

- The great majority of older women smokers have low nicotine dependence.
- Willingness to quit is associated with a low education level.
- The most frequent obstacles to quitting are all based on incorrect information.
- Success in quitting smoking is associated with smoking fewer than 1 cigarette/day and thinking that quitting is not difficult.

Conflicts of interest

There were no conflicts of interest.

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Ethical approval

Ethical approval was obtained from the Swiss Academy of Medical Sciences.

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Longitudinal change in coronary heart disease risk factors in older runners

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Abstract

Background: it is currently not clear how coronary heart disease (CHD) risk factors change over time in chronic exercisers. Therefore, the purpose of this study is to describe the longitudinal change in CHD risk factors in chronically endurance-trained men and women, and to determine the exercise and nutritional factors associated with those respective changes.

Methods and results: ninety-one middle-aged runners (56 male, 35 female) were tested on two occasions approximately 10 years apart (aged 50.8 ± 8.0 versus 60.0 ± 7.9 years at respective visits). Body composition, VO_{2max}, blood pressure (BP) and blood chemistries were measured, and the subjects' self-reported training and nutritional history. Data were analysed by factorial analysis of variance (ANOVA) and multivariate step-wise regression. Among the entire sample, training volume decreased (61.1 ± 28.2 versus 44.7 ± 24.6 km/week, $P<0.05$) but nutritional variables did not change. Body fat ($16.9 \pm 5.3\%$ for men versus $21.1 \pm 5.3\%$ for women, $P<0.05$), blood lipids, blood glucose and systolic and diastolic BP all changed negatively over the study duration. These changes occurred similarly in both genders and irrespective of menstrual and hormone replacement status among the women. Lastly, the changes in CHD risk factors were not predicted by change in exercise or nutritional patterns.

Conclusions: despite the maintenance of significant volumes of exercise and the absence of changes in diet, most CHD risk factors demonstrated unfavourable changes over 10 years in chronic men and women runners. However, the absolute values for most CHD risk factors remained better than those reported for sedentary peers of comparable age.

Introduction

The study of older athletes had focussed on describing primary age-related changes in physical fitness and sports performance [1–6], with less attention focussed on health-related changes such as those that reflect coronary heart disease (CHD). While exercise clearly protects against CHD and premature mortality [7, 8], risk is not absent in chronic exercisers, and there is a need to understand the factors that may change over time and contribute to that risk.

The few studies that have described longitudinal changes in CHD risk factors in older athletes [6, 9, 10], reflecting small, men-only samples, have demonstrated little or no change in various CHD risk factors over 7–33 years. It is