

## Smoking status, disease duration, and educational level in females, are related to asthma school participation

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*Smoking status, disease duration, and educational level in females, are related to asthma school participation. F. Gallefoss, P.S. Bakke, I.J.H. Wang, M.E. Gilja, A. Gulsvik. ©ERS Journals Ltd 2000.*

**ABSTRACT:** Limited data is available on those who do not want to attend an asthma school. Two hundred and forty-five asthmatics aged 18–65 yrs with an FEV<sub>1</sub> >50% predicted who had been seen at our outpatient asthma clinic within the last 3 yrs were invited to participate in an asthma school. The patients were contacted by phone by a nurse, offered a 2 day asthma school without personal costs.

Altogether 78% of those contacted answered positively. In a logistic regression analysis including sex, age, smoking status, educational level, asthma duration and own opinion of the disease, the adjusted odds ratio (OR) for nonsmokers wanting to participate versus smokers was 4.0 (95% confidence interval (CI): 1.8–8.3). The corresponding figure for patients with a recent asthma attack was 3.4 (95% CI: 1.5–7.6) compared to those without. For every 10 yr duration of disease the OR for wanting to take part in the asthma school increased by 1.6 (95% CI: 1.0–2.3). When analysing males and females separately, highly educated females were less willing to take part, while an opposite tendency was present in males.

In conclusion those interested in taking part in an asthma school were characterized by highly motivated nonsmokers with long duration of disease and with a recent asthma attack, and not being highly educated females.

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Asthma is an important public health problem in Western Europe and is associated with increased morbidity and mortality [1]. Patient education programmes have proven to improve medication adherence [2–5], increase lung function [6], reduce respiratory symptoms [2, 7–10] and asthma related emergency admissions [3, 7, 11–14] and to improve quality of life [15–18] in asthmatics. The response rates in these surveys have varied between 31% [19] and 95% [2]. Only two of the studies have examined in detail the characteristics of those not attending the education programmes [20, 21].

An Australian study [20] invited asthmatics aged 15–65 yrs still hospitalized after an asthma attack, to attend an education programme of 2.5 h. Of the eligible subjects only 31% attended and completed the education. Nonattenders were characterized by male sex, being smokers and having a low socioeconomic status. In another Australian survey [21] based on out-clinic patients, a response rate of only 43% was obtained. Nonattenders were characterized by younger age.

Little is known about nonparticipants of asthma schools in Europe [17]. Comparison of attenders and nonattenders in asthma schools is important in determining to whom the study results from these programmes can be applied. In the present study, asthmatics from an outpatient clinic were invited to participate in an asthma school. The objectives of the present report were to compare, by socio-demographic and respiratory variables, those who wanted to participate and those who did not want to take part in the asthma school.

### Subjects and methods

Subjects eligible for the study were those fulfilling the following criteria: they were aged 18–65 yrs; had received a diagnosis of asthma at the outpatient clinic of the Dept of Thoracic Medicine during the last 3 yrs prior to the study; and finally their forced expiratory volume in one second (FEV<sub>1</sub>) was >50% of predicted [22] at their last visit to the outpatient clinic. Excluded were those who lived >2 h of travelling away from the clinic, and who had other serious diseases than asthma that might influence the study results. Altogether, 245 patients fulfilled the criteria. They were phoned by one of five nurses, each nurse phoned 38–55 patients. Only four subjects were not reached after three calls.

The subjects reached were, in a structured way, invited to participate in an asthma school without personal costs. The items that would be taken up were pathophysiology of asthma, effects and adverse effects of asthma medication, inhalation techniques, legal rights as an asthma patient and how to live better with your asthma. The school would be held from 09:00–15:00 h on two subsequent days 2–4 weeks after the initial call. The patients were given five alternative dates for participation. Those who did not want to attend were asked to state their reasons.

Finally, all the patients were asked to answer a standardized questionnaire about their asthma, smoking habits and educational level. The following questions were asked: 1) how long have you suffered from your asthma?; 2) have you had an asthma attack during the last 3 months?; 3)

pick one of the answers to the following statement: "My asthma affects my life" a) not at all; b) to a minor degree; c) to a great degree; d) to a very great degree; 4) do you smoke cigarettes daily?; 5) which of the following educational levels have you passed? a) primary school; b) secondary school; and c) university college or university. Information on sex, age and FEV<sub>1</sub> % pred were obtained from the patient journals.

Of the 241 patients asked, 187 (78%) answered positive to participate. The response rate varied 74–85% between the nurses. All the subjects being interested in participating answered the questionnaire. Of the 54 patients who did not want to participate two subjects refused to answer the questionnaire. Those who were interested in attending the asthma school were randomized into an intervention group (n=93) and a control group (n=94). Eighty-five (91%) of those in the intervention group completed the education programme.

### Statistical analysis

Contingency tables were analysed for statistical significance using chi-square tests, or for stratified data, the Mantel-Haenszel extension of the test. Mean values were compared using a paired t-test. Multiple logistic regression analysis was used to examine independent predictors of participation. In all the tests a significance level of 5% was used. All the analyses were performed with the BMDP package [23].

## Results

The characteristics of those wanting, and those not wanting, to participate are given in table 1. The sex distribution, mean age and level of lung function in terms of FEV<sub>1</sub> % pred and level of education, did not vary significantly between the two groups. Neither did the two

Table 1. — Characteristics of asthmatics wanting and not wanting to participate in an asthma school

Variable	Want to participate n=187	Do not want to participate n=52 <sup>§</sup>
Sex female %	58	64
Age yrs	47±16	44±17
Smokers %	33	58**
Education		
Primary school %	39	29
Secondary school %	39	39
University %	22	33
FEV <sub>1</sub> % pred	77±19	80±19
Asthma attack within the last 3 months %	48	19**
Duration of asthma yrs	12±11	5±7*
Onset of asthma after the age of 20 yrs %	82	87
My asthma affects my life		
Not all %	34	79
To a minor degree %	29	13
To a great degree %	25	8
To a very great degree %	12	0

Data presented as absolute percentage or mean±SD. FEV<sub>1</sub>: forced expiratory volume in one second; % pred: percentage of the predicted value. <sup>§</sup>: two subjects refused to answer the questions; \*: p<0.05; \*\*: p<0.01.

groups differ with regard to those with disease onset after the age of 20 yrs. The prevalence of smokers was almost twice as high among the nonwilling as among the willing asthmatics. Those who were interested in taking part in the asthma school, reported having had asthma approximately twice as long as those who were not interested. About half of the interested patients had had a recent asthma attack while only one fifth of the noninterested had. One third of those interested felt that their disease affected their lives to a great or very great degree, while only 8% of the noninterested did (table 1) (p<0.05).

A nonsmoking status, a recent asthma attack and a long duration of disease were independent predictors of being willing to attend an asthma school (table 2). The patients personal opinion of the seriousness of their disease was no longer a significant predictor of the motivation to participate in the asthma school after adjusting for sex, age, smoking habits, educational level, a recent asthma attack, duration of the disease and FEV<sub>1</sub> % pred (table 2).

The sample were then examined by males and females separately. The same characteristics of those wanting and those not wanting to take part were found, except for age and educational level. Females interested in participating were significantly older than those not interested, the mean±SD age being 47±15 yrs and 39±15 yrs, respectively (p<0.05). In males, the mean age of the interested asthmatics was slightly younger than that of the noninterested, the figures being 47±16 yrs and 52±18 yrs. The frequency of highly educated females was three times higher among

Table 2. — Adjusted odds ratio<sup>§</sup> for willingness to participate in an asthma school, by sex, age, smoking habits, educational level, duration of disease, a recent asthma attack and opinion of own disease

Variable	Odds ratio	95% confidence interval
Sex		
Male	1	
Female	1.70	0.79–3.64
Age		
X	1	
X+10 yrs	1.01	0.80–1.22
Smoking status		
Nonsmoker	1	
Smoker	0.35**	0.15–0.58
Educational level		
Nonuniversity <sup>+</sup>	1	
University	0.77	0.54–1.11
Asthma attack last 3 months		
No	1	
Yes	3.16**	1.39–7.68
Duration of disease		
X	1	
X+10 yrs	1.66*	1.04–2.42
Opinion of own disease <sup>++</sup>		
Not at all or to a minor degree	1	
To a great or very great degree	2.00	0.76–5.22
FEV <sub>1</sub> % pred		
X	1	
X+10	1.07	0.87–1.32

FEV<sub>1</sub>: forced expiratory volume in one second; % pred: percentage of the predicted value [22]. <sup>§</sup>: Results from multivariate analysis (logistic regression analysis); <sup>+</sup>: nonuniversity includes primary and secondary school; <sup>++</sup>: answer to the statement: My asthma affects my life?; \*\*: p<0.01; \*: p<0.05.

those not willing to attend than in those willing ( $p < 0.05$ ). In males the prevalence of highly educated subjects was twice as high in those motivated than in those not motivated. After adjusting for age and smoking habits in a logistic regression analysis, high education was still an independent predictor for nonwillingness in females although no significant association between willingness to participate and educational level was observed in males.

The patients' reasons for not wanting to attend are given in table 3. When stratifying on sex, the main reason in females was lack of time, whilst in males it was lack of need. The reasons given did not tend to differ by smoking habits or educational level. However, the small number of subjects in the various strata warrants cautious interpretation of the findings.

### Discussion

To the authors' knowledge this is the first European study comparing those motivated and those not motivated to attend an asthma education programme. It was observed that 78% of those invited to the asthma school were interested in participating. Based on the few studies that give response rates, in the target population, there is a tendency that asthma schools recruiting their participants from patients admitted to hospitals due to an asthma attack, show higher participation rates than asthma schools recruiting patients from outpatient clinics or primary health care, although exceptions occur [20]. This is in accordance with our findings that patients with a recent asthma attack were more motivated to attend the asthma school than those without.

Smokers were less interested to attend than nonsmokers. A similar result has been found in previous asthma studies [20, 24] and in health promotion programmes among patients suffering from coronary heart disease [25]. Smokers may not want to be confronted with the adverse effects of smoking on their disease. In the present study all those who did not want to give a reason for nonparticipation were smokers. At the same time there are indications that knowledge about their asthma is lower in smokers than in nonsmokers [26]. Consequently, the potential benefit from attending an asthma education programme may be greater in smokers than in nonsmokers. Special attention should therefore be given to asthmatic smokers. Maybe asthma schools only for smokers combined with smoking cessation courses would improve their interest in taking part.

Table 3. – Reasons for asthmatics not wanting to participate in an asthma school (n=54)

Reasons	Males n=19 %*	Females n=35 %*
Lack of need	84	37
Lack of time	21	40
AS at inconvenient time of the day	11	40
AD for the asthma school inconvenient	11	0
Lack of motivation	26	14
Two days asthma school is too long time	11	0
Did not want to give a reason	21	14

AS: asthma school; AD: alternative dates. \*: The sum of the percentages exceeds 100% as some stated more than one reason.

Educational level did not predict the willingness to attend the study. However, when the analyses were stratified by sex, highly educated females were less likely to attend after adjusting for age, smoking and disease status in terms of FEV<sub>1</sub> in per cent predicted. A nonsignificant opposite tendency was noted in highly educated males. One explanation could be that highly educated females already had an adequate knowledge about their disease and their medicine, as well as their rights as an asthma patient compared to lower educated female. However, when asking the patients why they did not want to attend, the most commonly reported answer in highly educated females was lack of time, while in highly educated males it was lack of need. This may indicate that the finding is due to the fact that highly educated females have a higher burden from their professional and domestic duties, or feel a higher degree of responsibility towards them than do highly educated males.

The present study observed that the longer the asthmatics had suffered from their disease the more motivated they were to attend the education programme, after adjusting for sex, age, smoking status, educational level, a recent asthma attack and own opinion of how the disease affected their lives. This may reflect that a long duration of a disease not necessarily increases the knowledge and self-management skills correspondingly. Patients with a short duration of their disease may also have had a recent up date on their asthma as compared to patients having suffered from their disease for many years. Another explanation could be that patients with a long asthma duration have a more deteriorated disease status and feel a stronger need for attending an asthma school. However, those reporting lack of need did not have a better lung function than those reporting other reasons.

Lack of motivation and need were the reasons for not attending in ~75% of the asthmatics. These patients may have a poorer perception of the their illness and its potential risks. Increased response rate may be achieved by stressing the positive results from asthma schools on disease control [10–14] and quality of life [15–18]. Furthermore, as one third of the nonparticipants reported lack of time, a high flexibility as to duration as well as the time of the day of the asthma school may further increase the response.

The main consequences from the study are firstly, that reported positive results from outpatient clinic-based asthma schools may be restricted to motivated asthmatics, in the present study this tends to be nonsmokers with a recent asthma attack and a long duration of asthma. Secondly, special attention should be paid to smokers, highly educated females and patients with a new onset of asthma to ensure their participation in asthma schools. Finally, in these subgroups of asthmatics the effect of asthma education programmes should specifically be assessed.

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