



## Original article

## Two short interventions to reduce health care requirements in asthma patients. A multicentre controlled study (ASTHMACAP II)

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## ABSTRACT

**Background and objective:** Asthma control is suboptimal. The objective of this study was to reduce health care requirements and work absenteeism.

**Material and methods:** Multicenter randomized controlled study investigating asthma control, educational parameters, health service use, and absenteeism. After adjusting treatment according to GINA recommendations, control group patients (CG) followed their physician's recommendations, while intervention group (IG) patients additionally underwent a 5-minute educational intervention. This protocol was repeated at 3 months, and a final assessment was carried out at 6 months.

**Results:** 479 patients (mean age 40 (SD 17) years) were recruited from primary care, and 334 completed the study. Comparatively, IG patients showed an improvement at the 3- and 6-month evaluations in the six educational parameters ( $P < 0.001$ ) and required fewer urgent visits to the GP for exacerbations [RR = 0.49 (95% CI 0.26–0.90);  $P < 0.04$ ], and before the third evaluation, also in urgent GP visits [RR = 0.25 (95% CI 0.12–0.52);  $P < 0.001$ ]. Before this third evaluation, IG had fewer scheduled visits to the GP [RR = 0.48 (95% CI 0.28–0.82);  $P < 0.003$ ], and fewer visits to the primary care [RR = 0.40 (95% CI 0.18–0.87);  $P < 0.05$ ], and to hospital emergency rooms [RR = 0.13 (95% CI 0.04–0.42);  $P < 0.001$ ]. In addition, before the third evaluation, IG patients were less often absent from work [RR = 0.22 (95% CI 0.05–0.98);  $P < 0.03$ ] or unable to work at home [RR = 0.31 (95% CI 0.12–0.82);  $P < 0.02$ ].

**Conclusions:** Two short educational interventions improved asthma education and decreased the use of health resources and work absenteeism.

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### Dos cortas intervenciones reducen la utilización de recursos sanitarios en los pacientes asmáticos. Estudio multicéntrico controlado (ASTHMACAP II)

## RESUMEN

**Fundamento y objetivo:** El control del asma es sub óptimo. El objetivo del presente estudio fue reducir el consumo de recursos sanitarios y el absentismo laboral.

**Material y métodos:** Estudio multicéntrico randomizado que estudia el control del asma, parámetros educacionales, utilización del sistema sanitario y absentismo laboral. Después de ajustar el tratamiento de acuerdo con las recomendaciones de la GINA, el grupo control (GC) realizó las recomendaciones indicadas por su facultativo mientras que el grupo intervención (GI) fue sometido a una intervención educacional de 5 minutos. Este protocolo fue repetido a los 3 meses y nuevamente a los 6 meses en una intervención final.

## Palabras clave:

Asma

Educación sobre el asma

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◇ All members are listed in Appendix A.

**Resultados:** 479 pacientes (edad media 40 (DE 17) años) reclutados de atención primaria (AP), completaron el estudio 334. Comparativamente el GI mostró una mejoría a los 3 y a los 6 meses en los seis parámetros educacionales ( $p < 0,001$ ); antes de los tres meses requirieron menos visitas urgentes al médico de AP en relación a exacerbaciones [RR = 0,49 (95% IC 0.26-0.90,  $p < 0.04$ ]. Antes de los 6 meses también requirieron menos visitas urgentes al médico de AP [RR = 0.25 (95% CI 0.12-0.52);  $p < 0.001$ ] y también menos visitas programadas a este médico de AP [RR = 0.49 (95% CI 0.26-0.90);  $p < 0.04$ ], así como menos visitas en urgencias del centro de atención primaria [RR = 0.40 (95% CI 0.18-0.87);  $P < 0.05$  y a urgencias hospitalarias [RR = 0.13 (95% CI 0.04-0.42);  $P < 0.001$ ]. Además el GI mostró una menor tasa de absentismo laboral [RR = 0.22 (95% CI 0.05-0.98);  $P < 0.03$ ] o incapacidad para trabajar en casa [RR = 0.31 (95% CI 0.12-0.82);  $P < 0.02$ ].

**Conclusiones:** Dos escuetas intervenciones educacionales mejoran la educación sobre el asma y disminuyen la utilización de recursos sanitarios y el absentismo laboral.

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## Introduction

Asthma is a chronic disease that affects 6% of the European population.<sup>1</sup> Treatment of this condition has advanced considerably, but the current rate of asthma-related mortality remains high<sup>2</sup> and control of the condition continues to be suboptimal in Europe,<sup>1,3</sup> the United States,<sup>4</sup> and Canada.<sup>5</sup> This deficiency in asthma management, which was also evidenced in our country in the pilot report of the present study (ASMACAP I),<sup>6</sup> is attributed in part to a lack of adherence to the treatment prescribed.<sup>7</sup> The overall result is excessive use of healthcare resources and frequent visits to the emergency room,<sup>1,5</sup> which culminates in considerable health expenditure.<sup>8</sup>

Various interventions have been carried out in several studies to improve adherence to asthma treatment.<sup>9</sup> The conclusion obtained is that asthma clinical control is better when the intervention involves education, self-monitoring, regular review, and patient-directed self-management using a written self-management action plan (Evidence A).<sup>10,11</sup> It has been shown that improved asthma control is associated with reductions in healthcare utilization and related cost<sup>12,13</sup>; hence, the use of these interventions is recommended in daily practice. Nonetheless, these clinical interventions require a certain amount of time during the medical consultation, and general practitioners (GPs) may have too large a workload to effectively implement them. For this reason, the experts continue to underline the need for innovative interventions that are short and easy to carry out.<sup>14</sup>

The aim of this study was to determine the effectiveness of two short comprehensive educational interventions based on an explanation of the contents of a small booklet in asthma patients whose treatment was adequately adapted according to the Global Initiative for Asthma (GINA) guidelines.<sup>14</sup> The ultimate objectives were to improve the patients' knowledge of the disease and how to control it, and to reduce the use of primary health care services and work absenteeism.

## Material and methods

### Study design (Fig. 1)

Throughout 2005 and 2006, a prospective, randomized, controlled, multicenter comparative study in asthma patients was carried out, involving two educational interventions performed in 5 min with the help of an educational booklet.

### Patients (Fig. 2) (socio-demographic and clinical data in Table 2)

Participants aged 15–70 years were recruited in primary care centres (PCCs) from the lists of patients with a diagnosis of asthma, established by the attending GP. Following authorization by their physicians, patients were invited to participate in the study by

telephone contact. At the time of the call, patients were randomized to one of the two groups studied, the intervention group (IG) or the control group (CG), and were cited for an interview with a pulmonologist or a GP with expert experience in asthma. At this first visit, the patients' eligibility to participate in the study was confirmed if they fulfilled both of the following defining criteria for bronchial asthma: (1) a clinical diagnosis of asthma based on a history of episodes of cough and dyspnoea, wheezing, and/or chest tightness, a seasonal variation in the symptoms, and a positive family history of asthma or atopy favouring the diagnosis and (2) evidence of reversible airway obstruction confirmed previously or during the first visit.

### Medical visit

After signing informed consent for participation, all patients filled out a questionnaire designed for the study that included sociodemographic and clinical variables, and questions regarding their current asthma education, which were answered by “yes” or “no” (Table 3). The medication used, the clinical control data of the disease, number of visits to healthcare facilities (Table 4), and work absenteeism in the previous month were also recorded. At the first visit, patients underwent spirometry with bronchodilator testing, and filled out the Asthma Control Questionnaire (ACQ),<sup>15,16</sup> in this case referred to the previous week. Also at this visit, the treatment regimen was adjusted according to the severity of the condition based on the GINA recommendations.<sup>14</sup>

At this point, patients assigned to the intervention group received a 5-minute clinical intervention consisting of an explanation of the contents of the Diaryflow booklet, an informative publication for asthma patients, issued by the *Fundació Catalana de Pneumologia* (FUCAP) (Contents in Table 1). The physician then annotated the baseline treatment on dedicated pages and indicated a simple asthma action plan to follow in case of exacerbation of symptoms (fast-acting  $\beta_2$  agonists and if no response, a short course of oral corticosteroids). Patients were further instructed to visit the GP if, over the next 3 months, the severity of their condition increased or decreased by one stage,<sup>14</sup> so that their baseline treatment could be adjusted. The control group patients also underwent GINA treatment adjustment according to severity, but they did not undergo the educational intervention and were recommended to follow the previous advice of their GP.

At the second visit, 3 months later, the same protocol was repeated. At 6 months, during the final study visit, the same protocol was performed, and the control patients also received the educational intervention.

### Statistics

Between-group comparisons of results for categorical variables were performed with the chi-square test or Fischer's exact test.

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