

CONTROL, ADHERENCE AND EDUCATION

Asthma Management Failure: A Flaw in Physicians' Behavior or in Patients' Knowledge?

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Objectives. Patient–physician communication and patients' knowledge about asthma are relevant factors that influence health outcomes. The aim of this study was to explore general practitioners' (GPs) behaviors, asthma patients' knowledge requirements, and the relationship between physicians' communicative issues, and failures in patients' knowledge. **Methods.** GPs participating in a continuing medical education program on asthma completed an ad hoc survey on communicative style and recruited at least three adult asthma patients to indicate, among 10 options, three aspects of asthma about which they felt less informed. **Results.** The survey was completed by 2332 GPs (mean age 54.39 ± 5.93 years) and 7884 patients (mean age 49.59 ± 18.03 years). Several ineffective strategies emerged in the physicians' behaviors: 28.5% of GPs did not encourage patients to express doubts, expectations, or concerns; 39.4% tried to frighten patients concerning disease-related risks; only 25.7% used a written action plan. In addition, 18.6% of GPs were not averse to informing the patient about potential side effects; 16.3% did not try to simplify asthma treatment; approximately 30% considered ease of use when selecting drugs; 18% were not disposed to carry out a partnership with the patient; 36.9% were unlikely to involve the patient in asthma management; and 73% tried to retain control over their patients. Finally, 90.3% of GPs declared they want to be consulted before any treatment change. The three topics on which patients felt less informed were the meaning of asthma control (14% of patients); integration of asthma into daily life (13.3%); and periodic checkups (12.7%). There were significant associations between patients' choices and physicians' answers. **Conclusion.** These results demonstrate that in general medicine the recommendations of international guidelines on education, communication, and development of a doctor–patient partnership are still ignored and that patients' educational priorities may differ from those identified by medical specialists and by patients belonging to patients' associations.

Keywords asthma, management, control, knowledge, communication

INTRODUCTION

The goal of asthma treatment is to achieve and maintain asthma control, minimizing symptoms and daily limitations, as well as reducing life-threatening exacerbations and long-term morbidity (1, 2). Although asthma control can be reached in a good percentage of patients (3, 4), various observational studies have pointed out how asthma management remains unsatisfactory in real life (5, 6).

Failures in asthma management can be ascribed to several factors (e.g., disease severity, presence of comorbidities, lack of treatment adherence), chief among them patient–physician communication and patients' knowledge about the disease itself. Good communication within a consultation/medical visit is essential for a satisfactory outcome, and all published national and international guidelines for asthma management recommend a partnership between clinician and patient (1, 2). A review of 21 studies over a 10-year period found that 16 reported the quality of communication as influencing

patient health outcomes (7). Therefore, good patient–physician communication is considered a relevant tool for improving treatment adherence (8), and the difficulties of establishing and maintaining a therapeutic partnership between patients and clinicians has been already highlighted (9). Global Initiative for Asthma Guidelines suggest that patient education should be an integral part of all interactions between health care professionals and patients, and is relevant to asthma patients of all ages. The education of asthma patients should provide them with the knowledge, skills, and attitudes necessary to control their symptoms and cope effectively with their condition, and should enable them to recognize and avoid ineffective practices (2).

Although the relevance of physician communication to the development of profitable relationships with asthma patients is well known, it is unknown which communication skills are used by general practitioners (GPs) in daily practice. Although there is a reasonable consensus among physicians concerning the self-management skills that asthma patients should possess (10–12), the link between physician communication strategy and patients' unmet informational needs has not yet been explored.

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The aims of this observational study were to explore the modalities, behaviors, and communication skills that GPs tend to use with asthma patients, to investigate which disease management aspects the asthma patients are less informed about, and to explore which physicians' communicative issues are related to the failures in patient knowledge.

METHODS

The study was conducted between April and September 2009 in all Italian regions, and involved GPs participating in a continuing medical education (CME) program on asthma that was accredited by the Italian National Commission for Continuing Medical Education. The CME program was composed of two residential courses with a practical homework session in between, and its aim was to improve knowledge about disease control, opportunities for long-term therapy, relationship between asthma control and quality of life, and useful strategies to improve treatment adherence. Only office-based GPs between 25 and 72 years of age who cared for at least 1000 individuals were eligible.

To investigate the physician's communicative style and behaviors in asthma patient management, GPs voluntarily participating in the educational program were asked to complete an ad hoc survey during the pre-course phase.

During the homework phase of the educational program, physicians were asked to identify patients with asthma who were aged ≥ 18 years, had a physician diagnosis of asthma, and were attending the clinic for a consultation or to collect a prescription for asthma medication. Patients with chronic obstructive pulmonary disease were excluded, but smokers were not. Patient recruitment by physicians is a method that provides a strict control on sampling and all other aspects of patient selection. To minimize selection bias, physicians were requested to ask the at least five consecutive patients with asthma if they would participate in a survey. This was to ensure a random selection of patients and guarantee a sufficient number of patients to undertake at least three successful patient recruitments per physician. The enrolled patients were involved in a quantitative research program utilizing multiple-choice item selection methods. For this reason, the survey was preceded by the development of an educational/investigational tool (Patient Educational Plan; PEP) whose subject was the 10 most important points that asthma patients should know about their disease. All eligible patients received an invitation card, were asked to sign a consent form, and were informed that data collected during the study would not be passed on to any third party. The patients participating in the survey had to choose three points included in the PEP tool on which they felt less informed and provide their demographic data. All patients were then provided with a 10-topic educational tool.

Physicians and patients who participated in the study did not receive payment for their time or involvement. The study was conducted in accordance with national

legislation pertaining to confidentiality and data protection, and was approved by the local ethical committee.

Physician Survey: Tool Development.

An expert panel of the Italian Society of Respiratory Medicine (SIMEr) developed a survey containing 28 multiple-choice questions on the basis of literature analysis (13–18). The intent of the survey was to explore the physicians' personal experiences regarding asthma management and their perceptions of asthma patients' needs. GPs were asked to indicate on a five-point Likert's scale (almost never, seldom, sometimes, pretty often, almost always) how often they used each of the 24 listed communicative strategies. The four remaining questions were multiple-choice questions designed to investigate physicians' experience regarding patients' concerns, patients' disease awareness, possibility of achieving asthma control in real life, and long-term treatment.

Patient Educational/Investigational: Tool Development.

The PEP, which considered the 10 most important points that asthma patients should know about their disease, was developed through the following three steps:

- (1) The SIMEr Expert Panel identified, on the basis of the literature (2, 19–22), a list of 37 disease-related aspects that should be known by the patient for lasting asthma control.
- (2) Sixteen pulmonologists participating in the 2009 Global Initiative for Asthma Guidelines and Allergic Rhinitis and its Impact on Asthma (ARIA) Italian guideline updates and a corresponding number of asthma patients belonging to the Associations Unione Nazionale Asmatici (UNA) and Lega Italiana contro l'Asma Bronchiale e le Malattie Allergiche Respiratorie (LIAMAR) were asked to identify the 10 aspects that asthma patients should know about their disease, indicating for each selected item its importance on a scale ranging from 1 to 4 (1 = not very important; 4 = very important).
- (3) Frequency of choice (percentage, range 0–100), mean importance (range 1–5), and relevance (the product of frequency of choice and mean importance, divided by 100; range 0–4) were calculated for each aspect. The 10 items considered by the specialists, the patients and the matched list obtained considering prevalence of choices, mean importance, and relevance is reported in Table 1.

Table 1 shows the prevalence of the choices, mean importance relevance attributed to each item by the group of specialists, by the group of patients, first separately combined, then altogether in a unique match list.

Statistical Analysis

Data analysis was developed by a professional statistician in agreement with the SIMEr board panel and a psychologist. The descriptive analysis concerning the 24 listed communicative strategies was performed in dichotomous ways dividing those physicians who are prone to use a strategy (often or always) from those who are less prone

TABLE 1.—PEP development: pulmonologists', patients', and overall sample's preferences and item ranking.

	16 Pulmonologists				16 Patients				Pulmonologists/patients			
	Prevalence	Mean importance	Relevance		Prevalence	Mean importance	Relevance		Prevalence	Mean importance	Relevance	Ranking
What must be done in case of an asthma crisis	68.75	3.81	2.62		68.75	3.64	2.5		68.75	3.73	2.56	1
How to use the metered dose inhaler	75	3.41	2.56		18.75	3.33	0.62		46.88	3.40	1.59	7
Which are asthmatic symptoms	62.5	3.8	2.37		50	3.25	1.62		56.25	3.17	1.78	4
What must be done in case of presence of asthmatic symptoms	62.5	3.70	2.31		56.25	3.33	1.87		56.25	3.72	2.09	3
How to integrate asthma in daily life	50	3.62	1.81		50	3.13	1.56		50	3.38	1.69	5
The need of periodic checkups	50	3.50	1.75		56.25	3.44	1.93		53.13	4.24	2.25	2
The aim of the antiasthmatic therapy	62.5	3.40	2.12		12.5	3.50	0.43		37.50	3.42	1.28	10
Asthma is a chronic pathology	50	3.37	1.68		31.25	3.00	0.93		40.63	3.23	1.31	9
When to go to the ER	43.75	3.71	1.62		25	3.50	0.87		34.38	3.64	1.25	11
The role of rhinitis	43.75	3.28	1.43		12.5	2.50	0.31		28.13	3.11	0.88	
The meaning of asthma control	43.75	3.28	1.43		43.75	3.00	1.31		43.75	3.14	1.38	8
Bronchial asthma is always related to allergy	0	0	0		56.25	3.56	2.00		28.13	3.56	1.00	13
Which preventive strategies can be adopted	25	3.75	0.93		37.5	3.17	1.18		31.25	3.40	1.06	12
Asthma trigger factors	37.5	3.83	1.43		56.25	3.22	1.81		46.88	3.47	1.63	6
The relation between asthma and physical activity	6.25	3.00	0.18		50	3.25	1.62		28.13	3.22	0.91	15
It is possible to recover from bronchial asthma	6.25	3.00	0.18		50	3.13	1.56		28.13	3.11	0.88	16
Bronchial asthma can be lethal	18.75	3.66	0.68		37.5	3.33	1.25		28.13	3.44	0.97	14

to use it (never-seldom and sometimes). For the four questions about the physician's experience regarding patients' concerns, the percentage of each possible choice was analyzed. For what concerns the patient survey, the number, and the percentage of choices were analyzed for each item.

Student's *t*-test was used to detect significant differences in the means of quantitative variables for independent samples. Pairwise associations between categorical variables were assessed through the χ^2 test for heterogeneity. ANOVA was used to verify the hypothesis of equality of several means. The Z-test for performing pairwise comparison test equality of proportions was used. The statistical cutoff $\alpha = 0.05$ was chosen.

RESULTS

Among the 2500 physicians invited to the CME program, 2332 GPs filled in the survey and enrolled at least three patients. GPs enrolled 7884 asthma patients (among 11,660 requested to participate in the survey) during the period from April 2009 to September 2009. Demographic data from GPs and patients are reported in Figure 1 and Tables 2 and 3, and overall results appeared to be generally consistent across the regional sample (data not shown).

Physicians' Communicative Strategies Survey

GPs' answers to the 24 survey questions investigating the communicative strategies used are reported in Table 4. There was no significant difference in the analysis of the answers among physicians' age groups (ANOVA; *p*-value = .813).

According to 13.8% and 47.1% of GPs, respectively, asthma control is achievable in all or almost all patients, independent of disease severity; 4.5% of physicians believe asthma control is possible only in patients with mild asthma, whereas 36.4% believe asthma control is mainly possible in the most scrupulous patients.

TABLE 2.—GPs' demographic data.

GPs (<i>N</i> = 2332; mean age 54.39 ± 5.93 years)	
Sex	
Males	1674 (75%)
Females	658 (25%)
Years of practice	
<15	56 (2.4%)
16–30	1372 (58.9%)
>30	895 (38.4%)
Provenance	
Northern Italy	1212 (51.9%)
Central Italy	323 (13.8%)
Southern Italy	549 (23.5%)
Islands	236 (10.1%)

TABLE 3.—Patients' demographic data.

Patients (<i>N</i> = 7884; mean age 49.59 ± 18.03 years)	
Sex	
Males	4230 (45.3%)
Females	3501 (44.4%)
Education (Missing data: 321 (4.1%))	
Primary school	1587 (20.1%)
Secondary school	2412 (30.6%)
High school	2688 (34.1%)
Degree	876 (11.1%)

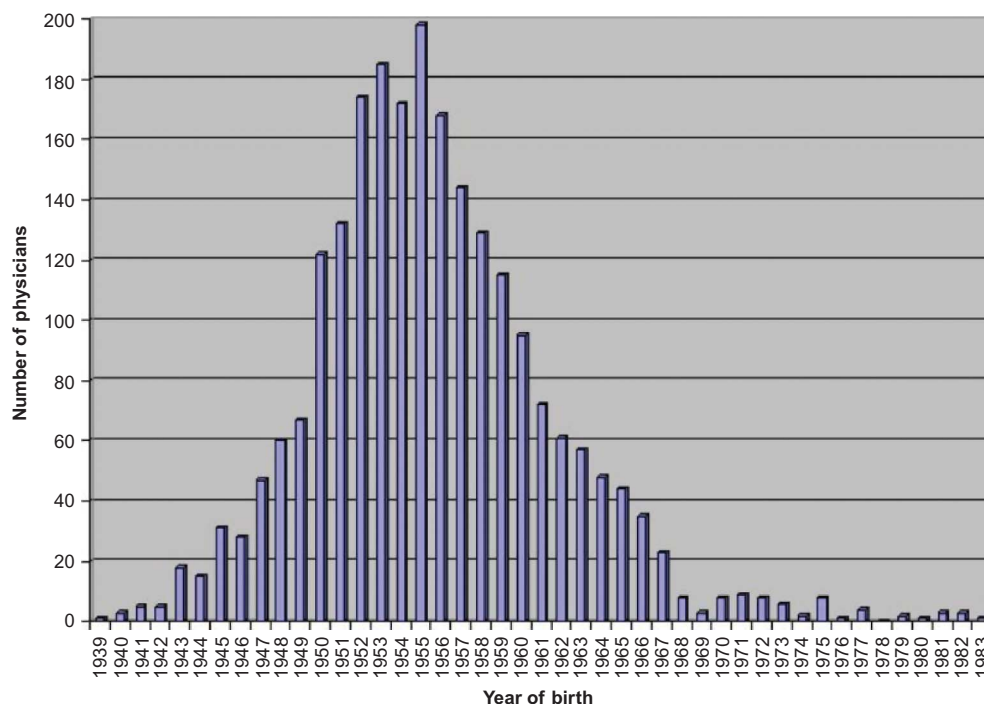


FIGURE 1.—Age distribution in physician population.

TABLE 4.—Communicative strategies survey answers in overall physician population.

		Physicians who are less prone to use the strategy (%) ^a	Physicians who are more prone to use the strategy (%) ^b
1 ^c	I investigate how the patient represents the disease to himself (which signs he gives importance to, what worries him, what makes him feel ill)	20.6	79.4
2	I offer adequate information to the patient	6.9	93.1
3 ^c	I supply the patient with supporting educational material	74.3	25.7
4	I inform the patient about the potential risks associated to the disease	13	87
5 ^c	I provide prescriptions which can be integrated in the patient day	26.5	73.5
6	I provide both oral and written super-imposable prescriptions	24.3	75.7
7	I explain the possible drugs side effects to the patient	18.6	81.4
8	I ask the patient to repeat the prescriptions together	53	47
9	I simplify, when possible, the therapeutical regimen	16.3	83.7
10	I prefer drugs which require mono-administration	32.3	67.7
11	I provide a written action plan	38.4	61.6
12	I involve the patient in the choice of the treatment plan	18	82
13	I try to strengthen patient's positive behaviors	18.2	81.8
14	I involve, when needed, some patient's relatives	55	45
15	I provide the patient with both oral and written personalized information about the disease	50.1	49.9
16 ^c	I try to keep control over my patient (visits, diary)	27	73
17	I want to be consulted before any treatment change	9.7	90.3
18 ^c	I frighten the patients describing asthma-related risks	60.6	39.4
19	I try to use a clear and simple language	5.3	94.7
20	I listen to the patient	4.8	95.2
21	I ask the patient many questions	17.7	82.3
22 ^c	I try to involve the patient in the asthma management strategies	36.9	63.1
23	I encourage the patient to express doubts, expectations, fears	28.5	71.5
24	I provide to the patient all possible information about asthma and its therapy	14.7	85.3

^aAnswers such as "almost never, seldom, sometimes."^bAnswers such as "often, almost always."^cQuestions whose answers may have been influenced by social desirability.

The majority of GPs (58.1%) declared that long-term asthma treatment in real life is a strategy applicable to most patients, whereas 16.65% and 25.2% of physicians declared that long-term asthma treatment is applicable only to some patients according to disease severity or patient characteristics, respectively.

Regarding physicians' perceptions of asthma patients' needs and difficulties, 69.9% of surveyed GPs believed that the potential for lifelong, continuous treatment is the most troublesome aspect for the patient. The remainder believed patients are mainly concerned about side effects (19.3%), difficulty in taking drugs (5.4%), and potential drug dependence (5.5%).

Almost half of GPs (47.1%) believed that asthma patients are scanty aware of the necessity for long-term therapy; many GPs believed that patients lacked awareness regarding disease chronicity (38.6%), bronchial obstruction (11.4%), and asthma symptoms (2.9%).

A significant difference was demonstrated between male and female physicians' answers to the communicative strategies survey (Table 5) and more women considered asthma control as an achievable target ($p = .006$) and judged long-term treatment feasible in real life ($p = .004$).

Survey of Asthmatic Patients. The topic ranking established on the basis of 7884 patients' choices, the number of choices for each topic, the percentages of patients who chose each of the 10 aspects concerning disease management on which they felt less informed, and the board-defined topic ranking (PEP) are reported in Table 6. Analysis did not demonstrate any significant influence of age or education on patients' choice in terms of less-known topics (data not shown); however, patients choosing "Asthma is a chronic pathology" were younger than those who chose "How to use the metered dose inhaler" (Z-test; $p = .007$), and choosing "The need for periodic checkups" was associated with a lower level of education (Z-test; $p = .021$).

Association between Patients' Choices and Physicians' Answers to the Survey

The χ^2 test was used to identify the behavioral approach of those physicians whose patients chose the three most-selected topics. Patients who were less aware of the meaning of asthma control were significantly associated with physicians who do not investigate how the patient represents the disease to himself ($\chi^2 = 6.641$; $p = .001$),

TABLE 5.—Differences in communicative strategies survey answers between male and female physicians.

		Physicians who are less prone to use the strategy (%) ^a		Physicians who are more prone to use the strategy (%) ^b		<i>P</i>
		<i>M</i>	<i>F</i>	<i>M</i>	<i>F</i>	
1	I investigate how the patient represents the disease to himself (which signs he gives importance to, what worries him, what makes him feel ill)	21.3	18.3	78.7	81.7	.104
2	I offer adequate information to the patient	7.2	6	92.8	94	.207
3	I supply the patient with supporting educational material	75.3	71.9	24.7	28.1	0.042
4	I inform the patient about the potential risks associated to the disease	13	13.1	87	86.9	0.970
5	I provide prescriptions which can be integrated in the patient day	27.9	22.7	72.1	77.3	0.001
6	I provide both oral and written super-imposable prescriptions	26.1	20	73.9	80	0.001
7	I explain the possible drugs side effects to the patient	18.5	22	81.5	78	0.186
8	I ask the patient to repeat the prescriptions together	53.9	50.6	46.1	49.4	0.005
9	I simplify, when possible, the therapeutic regimen	15.5	18	84.5	82	0.765
10	I prefer drugs which require mono-administration	31.5	34.4	68.5	65.6	0.685
11	I provide a written action plan	40.4	33.4	59.6	66.6	0.001
12	I involve the patient in the choice of treatment plan	19	15.1	81	84.9	0.0024
13	I try to strengthen patient's positive behaviors	20	13	80	87	0.001
14	I involve, when needed, some patient's relatives	56.3	51.6	43.7	48.4	0.001
15	I provide the patient with both oral and written personalized information about the disease	50.4	49.2	49.6	50.8	0.429
16	I try to keep control over my patient (visits, diary)	28.1	23.9	71.9	76.1	0.082
17	I want to be consulted before any treatment change	10.7	6.7	89.3	93.3	0.001
18	I frighten the patients describing asthma-related risks	62.5	55.8	37.5	44.2	0.002
19	I try to use a clear and simple language	5.8	4.1	94.2	95.9	0.001
20	I listen to the patient	5.3	3.5	94.7	96.5	0.005
21	I ask the patient many questions	19.5	13.3	80.5	86.7	0.001
22	I try to involve the patient in the asthma management strategies	36.9	37.3	63.1	62.7	0.815
23	I encourage the patient to express doubts, expectations, fears	30.6	23.2	69.4	76.8	0.001
24	I provide to the patient all possible information about asthma and its therapy	15.6	12.5	84.4	87.5	0.080

^aAnswers such as "almost never, seldom, sometimes."^bAnswers such as "often, almost always."

supply the patient with little supporting educational material ($\chi^2 = 6.896$; $p = .009$), provide few oral and written superimposable prescriptions ($\chi^2 = 626.193$; $p = .001$), tend not to listen to the patient ($\chi^2 = 3.995$; $p = .045$), and are not prone to involve the patient in their own asthma management strategy ($\chi^2 = 4.353$; $p = .037$). Patients who were less informed about how to integrate asthma into their life were more likely to have physicians

who supply the patient with little supporting educational material ($\chi^2 = 9.699$; $p = .002$), do not inform the patient about the potential risks associated to the disease ($\chi^2 = 3.865$; $p = .049$), do not ask the patient to repeat the prescriptions together ($\chi^2 = 6.960$; $p = .008$), do not prefer drugs that require mono-administration ($\chi^2 = 3.897$; $p = .048$), and want to be consulted before any treatment change ($\chi^2 = 29.421$; $p = .001$). Patients who were

TABLE 6.—Topic ranking choices (number and percentage of each choice) and PEP ranking.

Patients survey ranking	Topics	Number of patients	Percentage of patients (%)	PEP ranking
1	The meaning of asthma control	1105	14	8
2	How to integrate asthma in daily life	1048	13.3	5
3	The need of periodic checkups	1000	12.7	2
4	Asthma trigger factors	864	11.0	6
5	Asthma is a chronic pathology	853	10.9	9
6	What must be done in case of an asthma crisis	715	9.1	1
7	How to use the metered dose inhaler	668	8.5	7
8	The aim of the antiasthmatic therapy	599	7.5	10
9	What must be done in case of presence of asthmatic symptoms	553	7.0	3
10	Which are the asthmatic symptoms	479	6.0	4

less informed about the opportunity of periodic checkups were more likely to have physicians who do not provide prescriptions that can be integrated into a daily routine ($\chi^2 = 10.548$; $p = .001$), do not ask the patient to repeat the prescriptions together ($\chi^2 = 4.914$; $p = .027$), do not simplify the therapeutic regimen ($\chi^2 = 3.961$; $p = .047$), do not provide a written action plan ($\chi^2 = 8.104$; $p = .001$), and do not involve the patient in the choice of their own treatment plan ($\chi^2 = 10.857$; $p = .001$).

CONCLUSIONS

As recently reported by Cutler and Everett (23), poor adherence to treatment regimens has long been recognized as a substantial roadblock to achieving better outcomes for patients. Among the factors that affect adherence at the individual level, physicians' behaviors and patient's health literacy could be relevant. Paying attention to how information is gathered from the patient, giving the patient adequate knowledge, and building a cooperative partnership represent important and sometimes neglected steps toward better asthma management. The need to improve patients' knowledge about asthma through enhanced physician-patient communication and the use of patient-focused education have been recognized as unmet needs in asthma care (24). This observational study was intended to explore the modalities, behaviors, and interaction styles used by GPs to approach asthma patients, to investigate which aspects of asthma management the patients are less informed on, and to explore the association between the physicians' treatment behaviors and failures in patients' knowledge. We believe this is the first study to address the latter aim.

The analysis of doctors' answers clearly showed some critical points in behavior, attitude, and communicative style. Almost all GPs declared they listen to their patients and provide them with adequate information. Nevertheless, a relevant percentage of GPs seemed to be not used to considering what "being ill" means to their patients (~20%) and did not encourage patients to express doubts, expectations, or concerns (28.5%) (Table

3). Of the GPs surveyed, 74.3% are less prone to provide educational support material: brochures that could broaden asthma awareness through a careful reading in case of doubts are scantily used. These data are consistent with the observation of Boulet et al. (25) that provision of a written action plan and regular inhaler assessment are implemented in less than 50% of patients. Among GPs surveyed, 13% are less prone to inform the patient about risks related to asthma crises; on the contrary, 39.4% used the potentially harmful strategy of worrying the patient, which can arouse emotional reactions and behaviors in the patient (e.g., anger, denial, minimization) that could in turn jeopardize proper disease management. Concerning treatment, a written action plan could be an effective strategy to improve adherence. However, only approximately 25.7% of GPs claimed to use it in clinical practice.

Although asking the patient to repeat the prescriptions together with the physician can give the opportunity to highlight potential difficulties and misunderstandings that could affect treatment adherence and clinical outcomes, this method was not usually used by more than half of GPs. Being informed by the GPs about potential drug side effects is crucial, yet only 18.6% of GPs were not averse to discuss with the patient about this issue. Patients often do not undertake a treatment for fear of the side effects, because they experience side effects that frighten them, or because they erroneously ascribe unpleasant effects that are not related to therapy to their asthma medication. Physicians who do not consider this aspect during the control visit can enforce patients' doubts or false beliefs, which can compromise long-term asthma treatment.

The physicians referred behaviors that could interfere with optimal disease management: 16.3% of GPs declared that, even when possible, they do not simplify treatment regimens, and approximately 30% were not used to choosing drugs that were easy for patients to take (i.e., mono-administered), thereby not taking advantage of adequate therapeutic strategies that could favor asthma patients (who are generally young and busy).

Our survey pointed out some critical issues regarding relational aspects. The objective of creating a patient–physician partnership, which is considered a fundamental element in long-term asthma management (2), still seems far from being reached. Physicians' availability to develop a treatment project actively involving their patients is quite scant: 18% of interviewees declared they are not disposed to carry out a partnership with the patient, 36.9% are unlikely to involve the patient in choices concerning asthma management strategies, and 73% try to retain control over their patients. Moreover, 90.3% of GPs declared that they want to be consulted before any treatment change. Although maintaining high control levels could be reassuring for the physician, a highly controlling attitude does not seem suitable for most asthma patients: they are mainly young, autonomous individuals who need to learn how to manage a chronic disease. Moreover, not involving the patient in the therapeutic plan could lead to low adherence and difficulty in learning correct asthma management.

Providing the patient with positive feedback regarding management behaviors effectively helps create a powerful link between doctor and patient, but is not done by 18.2% of physicians.

The results of the survey highlighted that communication strategies were independent of age and regional provenance, although some differences were related to the gender of the physician. Women were more likely to engage in a partnership with the patient, to involve the patient in disease management by providing educational material and a written action plan, and to encourage patients to express their fears and doubts. On the contrary, female physicians preferred to maintain control of disease management and were more likely than male physicians to frighten the patient concerning the potential risks related to the disease.

During the PEP development phase, the substantial concordance between the choices made by specialists and by patients belonging to patients' associations underscores a common sensitivity to the topic. On the contrary, the comparative analysis of the relevance of the topics defined by the board and those chosen by recruited patients is quite different. Although the board ranks what must be done in case of an asthma crisis and in the presence of symptoms in first and second place with respect to importance, these are less important topics for the patient population (in sixth and ninth place, respectively) when compared with the meaning of asthma control, how to integrate asthma into daily life, and the need for periodic checkups. Although international guidelines focus on the importance of asthma chronicity and control, patients still seem less informed on these aspects. Having partial knowledge of the objectives achievable through the treatment, how to integrate asthma and its treatment into daily life, and how to monitor the pathology itself are important limitations to effective management.

It is fundamental to highlight how the GPs are aware of the educational needs of the patient: in fact, the 38.6% of them think that there is no awareness about disease

chronicity and, therefore, the need for a long-term treatment, which is a strategy considered by 58.1% of GPs as applicable to the majority of patients.

This observational study emphasized the significant associations between patients' choices and their physicians' answers, which indicate how less effective behaviors (in providing and collecting information, as well as involving the patient in the treatment) can lead the patient to have inadequate knowledge to manage and integrate asthma into daily experience.

This real-life survey presents several limits: the GP population is not homogeneous regarding age and sex (physicians who have been working for less than 15 years make up only 2%, and women comprise 25% of the population); however, this survey describes GPs aged 44–61 years who represent the 78.64% of the population examined and who have charge of the majority of patients per capita. The selection of the patients has been performed at random and independent of disease severity, but given the sample population it may be considered as indicative of the patients who go to GPs for asthma treatment.

It is clear that the unmet needs in asthma knowledge cannot be exclusively related to physician behavior, and also depend on other variables (e.g., patient education and personal characteristics, disease severity, social context); however, the GP represents a fundamental source of education for the patient, who can be influenced by physicians' behaviors and habits.

In conclusion, this real-life survey on a wide GP population underscores how a CME program can represent an appraisal of both doctors' and patients' educational needs. Moreover, this study has demonstrated that in general medicine the recommendations of international guidelines on education, communication, and development of a doctor–patient partnership are still ignored and that patients' educational priorities may be different from those identified by medical specialists and by patients belonging to patients' associations. It is of primary importance for the patient to understand where asthma treatment and control can lead, how to integrate asthma and its treatment to minimize asthma's influence in everyday life, and how to plan periodic asthma checkups.

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DECLARATION OF INTEREST

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

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