

Knowledge and practices of general practitioners regarding asthma in southern Morocco

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Abstract

Introduction: Asthma is a public health problem because of its frequency and the difficulties in its management. International recommendations have been established to better manage asthmatic disease and reduce morbidity.

The aim of our work is to evaluate the knowledge and practices of general practitioners regarding asthma.

Material and methods: This was a descriptive and cross-sectional survey of general practitioners in the south of Morocco, practicing in the private and public sector, to assess their knowledge and management of asthma patients. Data collection was done using a web questionnaire on the Google Forms platform.

Results: The total number of general practitioners who responded to our questionnaire was 180. Men represented 64.4% of the participants. Physicians in private practice represented 33.9% of the respondents. All general practitioners relied on questioning and 86.7% on clinical examination in the diagnosis of asthma. 87.2% of the respondents also requested complementary examinations, especially chest X-ray and skin tests. According to the majority of physicians, exposure to allergens and viral respiratory infections were the main factors in exacerbations. Short-acting beta-2-agonists were the background treatment for 62.4% of the physicians. Among respondents 63.9% did not know the GINA classification. The follow-up and monitoring of asthma patients, for 94% of the physicians, was based on the level of control.

Conclusion: Our study has shown that general practitioners have some lack of theoretical knowledge. On the other hand, there is a gap between practice and GINA recommendations.

Keywords: Asthma; General practitioners; GINA; Knowledge

1. Introduction

Asthma is a heterogeneous disease, generally characterized by chronic inflammation of the airways. It is defined by respiratory symptoms, such as wheezing, shortness of breath, chest tightness and cough, which vary in time and intensity, as well as variable expiratory airflow limitation [1].

Worldwide, 262 million people suffered from asthma and 455,000 died because of this disease [2]. While in Morocco the incidence is estimated at 43 cases per 10,000, and the prevalence at 3.8% [3].

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Asthma is a source of school and work absenteeism, as well as an important economic impact due to the cost of hospitalization.

Although there has been a marked and progressive reduction in asthma mortality internationally since the late 1980s, approximately half of asthma deaths could be prevented if recommendations and management strategies were followed [4].

Disease control is now at the heart of management, and the Haute Autorité de Santé (HAS) in France and the Global Initiative for Asthma (GINA) at the international level have issued recommendations for the management of asthmatics and the evaluation of their level of symptom control.

For successful asthma management, the physician must be aware of recommendations, including drug therapy and measures to prevent and control exacerbations. General practitioners play a key role in identifying poorly controlled asthma and improving disease management outcomes, as many asthma patients in rural communities are initially seen by them. In a recent European study, general practitioners were expert at excluding people who did not have asthma (specificity 99%), but misdiagnosed people with current asthma (sensitivity 59%) [5].

There is a lack of knowledge and a contradiction between the practice of general practitioners regarding the management of asthma and international recommendations [6].

Today, the Ministry of Health and Social Protection, under the high royal guidance, has carried out a project to generalize social coverage for the benefit of all Moroccans within the next five years. In order to achieve this objective, it has put among its axes the rehabilitation of general medicine, by placing it at the heart of health programs, the increase of the coverage rate by the consultation of the general practitioner, and the adoption of the regime of "Family Medicine - Family and Community Health". General practitioners are responsible for the initial management of asthma patients, as they have the most contact with patients, and they cover the entire national territory in the face of the shortage of specialist doctors in pneumology.

The aim of our work is to evaluate the knowledge and practices of general practitioners regarding asthma.

2. Materials and Methods

We conducted a cross-sectional study between January 2025 and March 2025 among general practitioners. General practitioners from the private and public sector practicing in the south of Morocco were invited to participate in our survey.

We included all general practitioners in the private and public sector practicing in southern Morocco.

A self-administered electronic questionnaire was sent to general practitioners via their professional networks, and participation was based on the principle of voluntary participation.

The data collected included: 1) data concerning general practitioners (age, sex, sector of activity, type of practice structure, length of experience, availability of an asthma management action plan and training received), 2) general practitioners' knowledge of asthma triggers and signs of severity. 3) Management practices and diagnostic means used by general practitioners. The questions were dichotomous and multiple choice.

The collected data were exported in the form of an Excel table. Statistical analyses were performed using Jamovi software. Categorical variables were presented as numbers and percentages.

The rules of confidentiality and anonymity were respected during the collection and analysis.

3. Results

3.1. Socio-professional characteristics of general practitioners

We had 180 general practitioners, more than two thirds were male (64.4%) and (66.1%) practiced in the public sector.

The average age of the participants was 42.58 years, The length of experience of the general practitioners ranged from 1 to 35 years with an average of 14.52 years and a median of 12 years.

3.2. Means used by general practitioners in the diagnosis of asthma

All general practitioners relied on questioning and 86.7% on clinical examination for the diagnosis of asthma.

The majority of respondents (87.2%) also requested additional tests, especially chest X-rays (100%), spirometry (64.3%) and skin tests (54.1%) for the diagnosis of asthma.

Table 1 Ways in which general practitioners diagnose asthma

	Number (n)	Percentage (%)
Interrogation		
Family history	139	81.8%
Personal History	117	68.8%
Personal and family atopy	148	87.1%
Clinical examination	156	86.7%
Search for clinical manifestations	180	100%
Paraclinical exams	157	87.2%
Chest X-ray	157	100%
Spirometry	101	64.3%
Skin tests	85	54.1%
Complete blood count	55	35%

3.3. Treatments used by general practitioners to treat asthma

Short-acting β_2 -agonists (95%) and oral corticosteroids (70%) were the main first-line treatments for asthma exacerbations (Table 2), and short-acting β_2 -agonists (62.4%) were the most commonly used background treatment for asthma, followed by inhaled corticosteroids alone (47.1%) or inhaled corticosteroids combined with long-acting β_2 -agonists (42.9%) (Table 2)

Table 2 Treatment of exacerbation and background therapy prescribed by general practitioners during asthma management

		Number (n)	Percentage (%)
Treatment of asthma exacerbation			
	Short-acting β_2 agonists	171	95%
	Oral corticosteroid	126	70%
	Inhaled corticosteroid	70	38.9%
	Injectable corticosteroid	63	35%
	injectable β_2 agonists	12	6.6%
Background treatment of asthma			
	Short-acting β_2 agonists	106	58.8%
	Inhaled corticosteroid alone	80	44.4%

	Inhaled corticosteroid+β2 long action	73	40.5%
	β2 long-acting	63	35%
	Oral corticosteroid	36	20%

3.4. Provision of a written action plan for asthma patients in the event of an asthma exacerbation, and recommendation of influenza vaccine

None of the physicians had a written crisis management action plan available to their patients in the event of an exacerbation. Almost two-thirds (61.7%) of respondents recommended the use of an inhalation chamber for aerosol administration to children. And 153 physicians 85% recommended influenza vaccination for asthma patients in the fall and winter.

3.5. Triggering factors and clinical sings for evaluating an asthma exacerbation

Viral respiratory infection (71.7%), exposure to allergens (61.7%), climate (56.7%), and smoking (56.1%) were the main triggers for the majority of physicians.

Table 3 The triggers of an asthma exacerbation

	Number (n)	Percentage (%)
Viral infection	129	71.6%
Allergens	111	61.6%
Climate	102	56.6%
Tobacco	101	56.1%
Physical effort	76	42.2%
Drugs	59	32.7%

Clinical signs such as signs of respiratory struggle (84.4%), respiratory rate (80%), and cyanosis (76.1%), were used in the evaluation of the severity of the crisis.

Table 4 The clinical signs of severity sought in the event of an asthma exacerbation

	Number (n)	Percentage (%)
Signs of struggle		
No	28	15,6%
Yes	152	84,4%
Respiratory rate		
No	36	20%
Yes	144	80%
Cyanosis		
No	43	23,9%
Yes	137	76,1%
Sibilant rales		
No	100	55,6%
Yes	80	44,4%

3.6. Knowledge of the GINA classification and follow-up of asthma patients

The majority of physicians 63.9% did not know the GINA classification, and among those who did know it 36.8% use it in their daily practice to classify the patient before starting the background treatment.

The follow-up and monitoring of asthma patients was based on the level of control for 94% of the physicians and on the peak flow meter for 47%.

4. Discussion

In our study 64.4% of the general practitioners were male, which is in line with a study done in France [7] which found a rate of 63% of general practitioners to be male, this can be explained by the fact that most of the female doctors prefer to work close to their families in central and northern Morocco, as well as the fact that all the faculties of medicine are located in the center and north of Morocco. Two medical schools have opened in 2017 and 2021 in the south of Morocco, which will meet the need for general medicine.

For proper management of asthma, the diagnosis of this disease must be confirmed. Asthma is characterized, first of all, by intermittent respiratory symptoms, appearing more often at night or in the morning on waking: cough, wheezing from bronchial tubes of reduced caliber due to bronchospasm (expiratory sibilants), dyspnea, chest tightness. The severity of these symptoms varies, and they are connected in various ways [8].

The diagnosis of asthma is based on : the search for an atopic background (eczema, conjunctivitis, rhinitis), a family history, etc.; a clinical examination looking for expiratory sibilants on auscultation; the examination is poor outside of attacks [8]. In our survey, 95% of general practitioners relied on questioning and clinical examination for the diagnosis, which is the same as a study done in Lebanon [5] which showed that 98.7% of general practitioners looked for cough and sibilant rales on clinical examination.

A lung x-ray is routinely considered to rule out other causes of wheezing. Consultation with an allergist can identify allergens that aggravate asthma symptoms [8].

Spirometry is used to document expiratory airway obstruction and is used to assess lung function. A reduction in forced expiratory volume in one second (FEV1) relative to forced vital capacity (FVC). (FEV1/FVC ratio) is used to document obstruction [9]. In our survey 87.2% of the respondents requested complementary examinations, especially chest X-ray (100%), spirometry (64.3%), and skin tests (54.1%). According to H. Lababidi et al [5], 98% of general practitioners relied on chest X-ray, 47% on spirometry and 22.5% on skin tests, which is in line with our survey.

Viral respiratory infections, especially those caused by the human rhinovirus, especially subtypes A and C, are the most frequent causes of exacerbations. The seasonal rise in human rhinovirus infections from September to December and again in the spring is correlated with hospitalization rates for asthma exacerbations among school-age children. Adults experience comparable increases in hospitalizations for asthma [10].

Environmental allergens can cause asthma. In addition, more than 80% of children with asthma are sensitized to environmental allergens. Activation of mast cells by allergens releases histamine, prostaglandin D2 and generates cysteinyl leukotrienes that cause airway smooth muscle constriction, increased microvascular permeability, mucus secretion and increased inflammation. Mold sensitization and seasonal increase in molds are paralleled by increased asthma severity and seasonal exacerbations [10].

Pollutants such as tobacco smoke, ozone and particulate matter, as well as occupational exposures, cause asthma exacerbations [10].

In our study, exposure to allergens, viral respiratory infection, and climate were the main triggers cited by the majority of physicians.

Symptoms of a severe exacerbation include chest tightness, coughing, feeling short of air, inability to speak due to labored breathing, inability to lie down, and fatigue. Use of supplementary breathing muscles, tachypnea, tachycardia, wheezing (or the cessation of wheezing as an indication of severe airflow limitation), hyperhidrosis, cyanosis, clogging, and altered mental status are all indicators of a severe exacerbation that necessitate immediate care [11]. According to the responders, clinical signs such as signs of respiratory struggle, respiratory rate, cyanosis were used in assessing the severity of the crisis.

Since their inception, short-acting bronchodilators for the relief of acute asthma symptoms have been prominent. Short-acting β_2 agonists and antimuscarinics act on airway smooth muscle to promote bronchodilation. This action is mediated by β_2 adrenergic stimulation of smooth muscle relaxation to induce bronchodilation or by cholinergic antagonism to relieve bronchial constriction under parasympathetic activity. Their usefulness in relieving symptoms is obvious and vital [12]. In our study, 95% of physicians used β_2 -agonists as first-line treatment for asthma exacerbations.

Because of the hazards of SABA-only therapy and SABA misuse, as well as the evidence of benefits from inhaled corticosteroids (ICS), GINA advises against using short-acting β_2 -agonists (SABAs) alone to treat asthma in adults and adolescents. When compared to SABA alone, large trials demonstrate that the on-demand ICS-formoterol combination reduces severe exacerbations in moderate asthma by about 60%. The results are comparable for exacerbation, symptoms, lung function, and inflammation when compared to daily ICS with on-demand SABA [13]. The addition of a long-acting β_2 adrenergic to inhaled corticosteroid therapy has been shown to improve symptoms as well as lung function and prevent exacerbations [14]. In our survey 62.4% of the physicians used a SABA and only 47.1% relied on inhaled corticosteroids alone and 42.9% in combination with a long-acting beta-2-agonist in background treatment, which is contradictory to the GINA recommendations.

The use of a metered dose inhaler requires the coordination and control of steps that must be performed correctly and in the right order. These steps are greatly improved, especially in the pediatric population, by the use of medical devices such as valved inhalation chambers [15]. In southern Morocco, 61.7% of general practitioners recommend the use of an inhalation chamber to administer aerosols to children.

Although GINA and the majority of international respiratory societies advise self-management techniques to lessen the impact of acute exacerbations, no doctor had given his patient a written action plan for severe asthma exacerbations. These strategies include patient education and the creation of a customized, written action plan [12].

5. Conclusion

Proper management can control the disease and reduce its impact not only on the patient but also on the community. Our study has shown that general practitioners do not have theoretical knowledge gaps. However, there is a gap between practice and GINA recommendations.

It seems necessary to optimize continuing medical education and to be regularly informed of the latest recommendations. In this context, we could propose a regular evaluation of good medical practices to all physicians by organizing round tables and conferences. We could also give more importance to asthma in the national health programs adopted by the Moroccan Ministry of Health and Social Protection.

Compliance with ethical standards

Disclosure of conflict of interest

The authors declare that they have no conflicts of interest related to this study.

Statement of ethical approval

The present research work does not contain any studies performed on animals/humans subjects by any of the authors'.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

Authors' contributions

All authors contributed significantly to the development and completion of this work. Their roles included study design, data collection, analysis, and manuscript preparation.

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