# Roles of pharmacy agents in asthma care in Africa: Survey of community pharmacists in Libreville

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## Abstract

**Background:** The pharmacy agents is sought regularly by asthmatic patients.

**Objective:** To assess delivery asthma drugs in community pharmacies in Libreville, Gabon.

**Methodology:** This was a cross-sectional survey by self-administered questionnaire, interesting to the agents of pharmacies. It was conducted to assess delivery of asthma drug in community pharmacies in Libreville, Gabon.

**Results:** The acceptance rate for pharmacies was 75.0%. All the participants in the study report having been visited by an asthma patient in the pharmacy, either during acute episodes (75.7%) or between acute episodes (95.1%). It was found that a considerable number of patients come to community pharmacies for care without prior medical prescription (26.6%). In case of acute episode, care is provided by the agents of pharmacies (91.7%). At the pharmacy, asthma management is provided by pharmacists in 82.4% of acute episode. The technical of handling metered dose aerosols, and the inhalation chamber are poorly understood by dispensing agents. In the background treatment, oral corticosteroids (8.2%) and β2-CDA (7.5%) are still used. Counseling was also given to patients on the doctor's consultation (52.1%), the eviction of any contact with a known allergen (50.2%), the smoking elimination (45.0%).

**Conclusion:** It is more than necessary to integrate in health policies the ongoing training and evaluation of community workers.

## Introduction

Asthma is a chronic inflammatory disease of the airways that is characterized by symptoms of short duration specific to each patient, spontaneously reversible or under treatment, and potentially serious exacerbations [1]. This is a common reason for seeking care. Due to its high prevalence, particularly in children, the possible prevention of exacerbations, the costs engendered by this disease, asthma constitutes a public health priority [2]. However, progress is still needed in this area, as asthma control in reality is still far from optimal. Unlike other chronic diseases, the treatment of asthma combines a twofold difficulty: non-compliance with prescribed treatments and improper use of inhaled drugs [3]. A dispensary agent is a person dispensing medicines in a private dispensary pharmacy, recognized by the National Order of Pharmacists of Gabon (ONPG) and having received certified training as a "pharmacy seller", regardless of level of studies. He is a community health professional who can play an essential role in both the diagnosis and the treatment of asthma. This role concerns assistance in understanding the disease and treatments, learning inhalation techniques and self-monitoring [4]. Also, the latter, far from being limited to the dispensing of drugs, must engage in the education of asthmatics. In some Sub-Saharan African countries such as Gabon, these dispensing agents are often the first point of contact for patients in dispensing medicines due to the insufficient number of pharmacists available in pharmacies. On the other hand, the serious shortage of human resources in health, in particular the medical specialists, consequence of a socio-economic environment particular to the developing countries and of the bad distribution of the medical cover is at the origin of insufficient management of asthmatic patients [5]. So gradually the need arose to design and prepare well-structured education programs in which, alongside the doctor, the pivot of the therapeutic relationship, other caregivers: nurses, physiotherapists, pharmacists [6] and dispensary agents would have a role more important to play. Therefore, it seemed to us that we deserved to appreciate the attitude of the pharmacy officers in different situations likely to be encountered in the delivery of asthma drugs in Libreville.

## Materials and Methods

### Study design, place and period

The study was conducted in the three municipalities of the Gabon's capital (Commune of Libreville, Akanda and Owendo). Gabon is located in Central Africa. Straddling the equator, it is limited to the northwest by Equatorial Guinea, to the north by Cameroon, to the east and south by the Congo and to the west by the Atlantic Ocean which borders it on more than 800 km of coast. Its area is 267,667 km2

with a forest covering more than 75% of its territory. The climate is equatorial, hot and humid. The average annual temperature is 26°C and the humidity over 80%. The population of Gabon is estimated at 1,811,079 inhabitants, more than half of whom are under 22 years of age [7]. This was a cross-sectional survey, which took place over a six-month activity period from March 1 to September 1, 2018.

## Target population and Number of Participants

This study looked at all of the pharmacy agents. The choice of this population is due to the fact that in our daily practice, they are the first interlocutors in the delivery of medicines to patients in pharmacies. For the census of these, we based on the updated list of the National Council of the Order of Pharmacists of Gabon on April 30, 2018 and which included 76 pharmacies on which, a two-stage stratified cluster sampling plan was constructed in which the dispensary establishments constituted the primary sampling units and each pharmacy the secondary units. A total of 57 out of 76 pharmacies agreed to participate in the study after the draw, an acceptance rate of 75.0%. Among the 57 pharmacies, 267 pharmacists agreed to participate.

## Presentation of the questionnaire

It was an anonymous self-questionnaire, which included 30 questions divided into five items: knowledge and practices of the pharmacy agent in the face of acute asthma exacerbation, apart from acute asthma exacerbations, faced with the basic treatment of asthma, faced with inhaled drugs, inhalation chambers, and finally a survey of general behavior towards asthmatic disease. The evaluation of the inhalation devices was carried out using a predefined evaluation grid inspired by the available diagrams. Thus, all the questions had the modalities of answers. Except for the questions referring to the signs of severity of asthma, and the demonstration of the inhaled devices that were open in terms of "Name the signs of severity of the acute asthma exacerbation you know?" , " Demonstrate the use of inhaled devices and inhalation chambers."

## Data collection and analysis

### Collection of data

Before the survey was carried out, the card was pre-tested with 10% of the desired workforce. This ensured that the questionnaire was understood. The survey was conducted by a single student in the thesis year who had previously received training in conducting a survey using a self-administered questionnaire. For each pharmacy selected by lot, the survey was conducted in one morning. The completion of the questionnaire was 15 to 20 minutes in the presence of the investigator.

### Data analysis

Data analysis was made possible by Epi info 3.5.1 software. We proceeded to a descriptive analysis of the data. The description of the characteristics of the population was made for the quantitative variables using the mean ± standard deviation or the median (minimum - maximum). Qualitative variables have been described by their frequency.

### Ethical considerations

This study received prior approval from the Council of the Order of Pharmacists of Gabon, which undertook to inform in writing and by telephone, the various private pharmacies of our passage for the need of investigation. Respect for the dignity, privacy and freedom of the person answering questions was observed.

## Results

### Conditions for dispensing asthma medicines at the pharmacy

The pharmacy agents claim to have been visited by an asthmatic in a pharmacy, either only during acute exacerbations (75.7%; n = 202), or only outside acute exacerbations (95.1%; n = 245), either in exacerbation and outside of exacerbations (82.7%; n = 221). Among asthmatic patients, 26.6% (n = 71) presented to the pharmacy without a prescription, 5.6% (n = 15) always had a medical prescription and 65.5% (n = 175) rarely. When the asthmatic presented to the pharmacy without a medical prescription, 91.7% of the medication was dispensed without a prescription requirement in the event of acute exacerbation; a prescription was required in 53.6% outside of acute exacerbations. The pharmacy agents say they offer pharmacy treatment for acute exacerbation in 82.4% (n = 220).

### Knowledge and practices during acute asthma exacerbations

Pharmacy officers said they knew the severity of acute asthma exacerbations in 67.1%. The frequently cited signs of severity were; breathing difficulties (61.8%), followed by coughing difficulties (3.7%), restlessness (2.3%). None of the participants cited all the signs of severity (difficulty speaking, difficulty coughing, cyanosis, sweating, respiratory rate greater than 30 / minute). The drugs delivered during the acute exacerbation of asthma were beta-2 mimetics in metered dose aerosol (82.4%), corticosteroids for injection (21.7%) and the combination of beta-2 mimetic and corticosteroid in pressurized aerosol (19.8%). In addition to the recommended treatment, pharmacists advised asthmatics to be followed by a doctor in 80.2%, to go home in 14.6%.

### Knowledge and practices outside of acute asthma exacerbations

The drugs recommended by dispensary agents in the absence of a medical prescription and apart from acute exacerbations were injectable corticosteroids in 38.2%, inhaled corticosteroids in 36.7% and the beta-2 mimetic and corticosteroid combination. in pressurized aerosol in 36.3%. Only 19.5% systematically advised asthmatic patients during their visit outside of exacerbations. The advice provided was to see your doctor again (52.1%; n = 139), avoid contact with a known allergen (50.2%; n = 134), places to smoke (45.0%; n = 120).

### Knowledge and Practices for the Basic Treatment of Asthma Background

The treatment is recognized as necessary by 40.1% (n=107) of dispensary officers. The therapies recommended as background therapy by the pharmacy agents were oral corticosteroids (8.2%; n=22), the beta-2 mimetic combination and pressurized aerosol corticosteroid (5.2%; n = 14) and short-acting beta-2 mimetics (7.5%; n = 20). In addition, antihistamines were recommended for basic therapy by 65.5% (n = 175) of pharmacy agents. Regarding verification by pharmacists of the proper use of the inhaled devices delivered; 35.6% systematically checked the correct use of the inhaled devices delivered, 19.1% always and 36.3% never. In the presence of asthmatic children, the inhalation chamber during the delivery of asthma medication was systematically recommended by 13.1%, often by 4.5% and never by 65.1%. Knowledge of the operation of the inhaled devices and the inhalation chamber The pharmacy agents claimed to know the technique of using a metered dose aerosol in 83.9% (n=224), of the inhalation chamber in 36.7% (n=98), of the Autohaler in 30% (n=80) and the Turbuhaler in 15.7% (n=42). The demonstration of inhaled devices was systematically performed by 18.7% (n=50), sometimes by 16.5%, while 40.1% (n=107)

never demonstrated. Of the 267 pharmacy officers interviewed, 159 (59.5%) had agreed to demonstrate the use of inhaled drugs. Refusal to demonstrate was considered to be ignorance of how the inhalation device works. In addition, 12.6% (20/159) had used the metered dose inhaler correctly by validating all of the steps mentioned in the questionnaire. None has validated all the steps of the other devices used: Autohaler®, the Turbuhaler® and the inhalation chamber. The predominant fault consisted for the Autohaler, forgetting to fully expire from the device, tightening the lips around the mouthpiece, exhaling slowly and closing the device using the pusher, for the Turbuhaler forgetting to maintain the device vertically, exhale entirely outside the device, and exhale slowly. For the inhalation chamber the predominant fault was to present the aerosol upside down, in front of the chamber orifice and inhale slowly and deeply into the chamber. Among the 12 steps to be carried out for better use of metered dose inhalers, the most frequently known were: removal of the cap (75.2%), position of the metered dose inhaler must be vertical (59.3%), and slow inspiration and triggering the cartridge only once at the start of inspiration (23.6%).

## Difficulties encountered by pharmacist's officers

The difficulties encountered at the pharmacy concerned the lack of a prescription (88.0%; n=235), the indiscipline of asthmatic patients (42.3%; n=113), the patients' difficulties in using the metered dose inhaler (29.2%; n=78), and illiteracy (42.3%). The most frequently asked questions to pharmacists by asthmatics relate to the role of the drugs used (23.7%; n=64), the possibility of curing asthmatic disease (20.2%; n = 54). All of the study participants expressed the desire for asthma training through seminars (59.2%; n=158) and postgraduate education. (37.4%; n=100).

## Discussion

This study offers a global overview of the practices and knowledge of the daily medical officers confronted with the visit of asthmatic patients both in acute exacerbation and outside exacerbations. This study only assessed intentions to practice at the pharmacy. It cannot be said with absolute certainty that this is the exact reflection of the practice of dispensaries, a survey of the patients will make it possible to better appreciate the real habits. The results of our survey are based on the validity of the data collected by self-questionnaire conventionally used in this type of survey. The pharmacy officers surveyed said that they received asthma patients both during exacerbations (75.7%) and outside acute exacerbations (95.1%). This strong convergence of asthmatic patients towards pharmacies is a reflection of the insufficiency of health structures coupled with the lack of doctor in our context of exercise thus causing long queues at the hospital, which hardly encourages hospital attendance. There is also a socio-cultural and economic reality that our populations have tendency to go directly to the pharmacy, thereby avoiding the heavy consultation costs [6] in a context of impoverishment. The majority of community health workers (82.4%) said they would recommend pharmacy treatment for acute asthma exacerbations in the absence of a medical prescription. This observation had also been found in the literature [4,6,8]. The exacerbation of asthma is an important event by its potential seriousness which can jeopardize the vital prognosis of the patient, by the unexpected recourse to the care which it involves [9,10]. It therefore requires an urgent treatment [10]. An episode of exacerbation may be an opportunity to establish contact with the patient (educational approach) to increase adherence to basic treatment with inhaled corticosteroids, which remain the best preventive management of future exacerbation [11]. Among the most widely used drugs for acute exacerbations were beta-2 mimetics in

metered dose inhaler (84.2%) and injectable corticosteroids (21.7%). These results were also found by Toloba et al., Where pharmacy agents prescribed bronchodilators and nonsteroidal anti-inflammatory drugs respectively in 68.8% and 3.8% [12]. Short-acting β-2 mimetics (β2M) (CDA) may be recommended by the dispensers of medicines in order to relieve the patient in an emergency. Leaving the patient in the midst of an asthma exacerbation would expose him to death. This is consistent with asthma consensus conferences. According to the recommendations, the β2 CDA or rescue treatment are the drugs which must be recommended as first line. They temporarily improve symptoms until the cause of the worsening of asthma symptoms disappears or the increase in treatment takes effect [1]. Increased respiratory rate, difficulty coughing, and restlessness were the three most frequently cited severity criteria among the officers interviewed. This lack of knowledge of the signs of severity of acute exacerbation has also been highlighted in the literature among pharmacists by Casset et al., [3]. So, this ignorance, runs the risk of ignoring severe acute asthma in an apparently stable patient for whom the inhalation of bronchodilators alone is insufficient. The notion of exacerbation covers very different serious situations. They have in common the urgency of therapeutic management, the heaviness of which must be adapted to the severity of the clinical manifestations [11]. In addition to the recommended treatment, the majority of pharmacy staff advised asthma patients to seek medical attention (80.2%). This attitude has also been advocated by several authors [3,6,8]. This is a correct attitude, because in the face of an exacerbation of asthma, the pharmacy agent must play down, reassure the patient and refer him to the doctor [4]; general practitioner, pulmonologist or pediatrician for therapeutic education. The background treatment is recognized as necessary by 40.1% of the pharmacy officers. The therapies recommended by the pharmacy agents were oral corticosteroids (8.2%), the beta-2 mimetic association and corticosteroid in pressurized aerosol. This observation was also made respectively by Koffi et al., And Badoum et al., Where the majority of pharmacists interviewed had recognized the need for background treatment in 98.4% and 74% of cases, respectively [4,6]. Contrary to their study which concerned pharmacists, ours concerned the pharmacy agents, that is to say the pharmacist salesmen who can explain the difference in the proportions in the use and the prescription of the basic treatment. These pharmacy salespeople are not often adept at handling specialty drugs. To date, inhaled corticosteroids (ICS) have been the mainstay of basic therapy for persistent asthma [13]. The difficulties encountered at the pharmacy by asthmatic patients concerned the lack of a prescription (88.0%), the indiscipline of asthmatic patients (42.3%) and the difficulties of patients in using inhalation devices (29.2%). These difficulties have also been encountered by other authors [6]. These difficulties are partly explained by the lack of information and education of asthma patients by doctors in charge of asthma patients. A Well-conducted and continuous therapeutic education must imperatively be integrated into the treatment of asthma, since it has shown its effectiveness in the prevention of exacerbations of asthma by reducing the use of emergency rooms and hospitalizations [14,15]. Therapeutic education is a continuous process, which is an integral and permanent part of patient care. To be effective, this education must not be limited to purely theoretical knowledge but make the patient a fully-fledged player in his care, convinced of the need to use his treatment properly [16]. Of the 267 pharmacy officers surveyed, 59.5% agreed to demonstrate the use of the inhaled devices and the inhalation chamber. There was a misuse of the inhaled devices. This ignorance of the use of inhalation devices is not the only prerogative of dispensing officers, it has also been found among pharmacists [3,17].

## Conclusion

Despite a relatively good knowledge on the treatment and prevention of asthma which remains to be improved, shortcomings have still been noted, on the ability of pharmacy agents to recognize the signs of severity during exacerbations acute asthma and use of inhalation devices. Shortcomings have also been noted in the prescription of treatments for both exacerbation and basic therapy. Finally, for the pharmacy officer to fully play his role of advice and education in the management of asthma, this must necessarily go through regular and sustained training which should be integrated into health policies.

## Thanks

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