

Original Research Article

Asthma knowledge and management practices of pharmacists in Greater Accra

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ABSTRACT

Background: Asthma continues to be a global public health problem, and community pharmacists are at the center of drug therapy in areas such as Greater Accra, Ghana.

Methods: This study determined what 177 community pharmacists knew about managing asthma and what barriers they faced in their practice. Data were collected using a structured questionnaire regarding demographics, asthma knowledge, daily management practices, and perceived barriers.

Results: Most pharmacists (55.93%) had a good understanding of asthma management, 42.37% had moderate knowledge, and 1.69% had poor knowledge, the results showed. More specific to asthma were pharmacists (100%), were well versed in asthma pathophysiology (100%), triggers (93.22%), and use of peak expiratory flow (PEF) meters (94.92%). However, some inconsistencies in practice were present. While inhalation techniques were assessed by 73.68%, treatment side effects were discussed by 79.31%; however, only 49.15% were routinely counselled on inhaled corticosteroids (ICS). In addition, only 18.64 percent ensured patients had written asthma action plans. Asthma Action Plans were lacking in 81.4%; there were inadequate training opportunities (64.4%); designated consultation areas were lacking (52.5%); pharmacists had insufficient time to care (52.5%) and had time constraints to care (55.9%). Our findings are consistent with global observations and highlight system-level challenges that impede effective asthma management.

Conclusions: Although the Greater Accra pharmacists are knowledgeable enough based on their low rates of noncompliance indicated by their blood pressure scores, we believe that gaps in their practices and barriers to narrowing these gaps must be bridged.

Keywords: Asthma, Ghana, Knowledge, Management, Pharmacists

INTRODUCTION

Asthma remains a major global health problem, with millions of patients and a significant burden of morbidity and mortality.¹ In Ghana, as in other developing

countries, asthma management starts at the community level, where pharmacists are key players. Community pharmacists are immensely accessible healthcare providers who advise, educate, and help patients with chronic diseases such as asthma.²

Over the last decades, pharmaceutical care has become more inclusive regarding patient care and management. Pharmacists have developed the role of dispensing medication to provide expanded medical service provision, patient care, and management.³ Pharmacists in the communities also manage many of the common illnesses, thus reducing hospital care and hospitalization rates. Asthma is a chronic inflammatory respiratory disease of variable severity characterized by symptoms of short duration specific to the individual patient and often reversible or under treatment and with potential for severe exacerbations.⁴ Community pharmacists are the most approached healthcare professionals with medical conditions or illnesses. Good asthma management helps patients lead as everyday life as possible with asthma that cannot be cured. Symptom control and prevention of exacerbations are the goals of management. In 2019, asthma affected approximately 262 million people globally, leading to 455,000 deaths, and the global population affected 400 million in 2025.^{5,6} About one in every 250 deaths worldwide accounts for especially in exacerbations.⁷

The high prevalence of asthma, especially in children, makes it a high priority for health, coupled with the pain and costs incurred by managing the disease.⁵ While there has been some progress in asthma management and control among populations, most asthma care and management remain far from optimal due to a lack of compliance with recommended management practices and inappropriate use of medications.⁸

Poor patient compliance with prescribed medications and other crucial components of medical treatment can adversely influence the treatment outcome for many chronic conditions, including asthma.⁹ In recent years, community pharmacists have taken it upon themselves to offer healthcare advice to those with acute and chronic illnesses.³

Most acute and chronic care, including asthma, is first contacted in most low and middle-income countries at a community pharmacy.¹⁰ Community Pharmacists, due to their ease of accessibility and expertise, constitute a unique opportunity to assist Ghanaian patients in managing chronic illnesses. A compelling argument requires pharmacists to be the first point of call for asthmatic patients and that the quality of their care is hinged mainly on the level of their knowledge of their illness and the management protocols.¹¹

To increase asthma awareness and prevention and management, guidelines for clinical practice, such as the Global Initiative for Asthma (GINA), were instituted to help healthcare professionals intensify asthma awareness.¹² The Standard Treatment Guidelines (STGs) also exist in Ghana to prescribe asthma treatment.¹³ Although guidelines are available to at least some extent to address the care of patients with asthma, there have been reports that practice patterns vary from health

professional to health professional according to the extent of knowledge and the number of options available for the management of such patients.^{14,15}

Even with the improved control and management practices associated with available guidelines on governance and the multitude of management options, most control and management practices have remained suboptimal.¹⁶ Despite the involvement of professionals in managing asthma, reasonable control requires patients' self-management with the advice of professionals, including pharmacists. Patients with better adequate self-management of asthma rely on healthcare professionals' ability to educate them on the right, proper asthma management products and protocols.¹⁷ People with mild to moderate asthma symptoms usually visit community pharmacies as the first point of contact. Pharmacists are, however, highly accessible and experienced healthcare professionals with the most contact with patients in the communities; fortunately, they have made minimal contributions to asthma care.

It is appropriate that pharmacists are taught and considered experts in asthma care, as the research in this area suggests.^{6,18} However, pharmacists' knowledge of asthma and (standardized) guidelines are key determinants of the scope of management and the types of interventions they can execute as a part of their practice.^{11,19} There is a need to assess knowledge and practice in community pharmacies in Ghana as several acute and chronic phases of asthma are managed in community pharmacies. Therefore, this study aims to evaluate the know-how and practices of community pharmacists on asthma control and management in the Greater Accra region. Asthma control, patient education, and quality of healthcare overall are impacted by this variation. Using knowledge and practices of asthma management of community pharmacists in Greater Accra as a basis, this study examines the existing barriers to effective care. It makes suggestions that can be used to improve asthma outcomes in the community.

The scope of pharmaceutical practice has expanded and is of interest, yet few studies have focused on community pharmacists' knowledge of asthma care guidelines. Pharmacists' knowledge and practical approaches to controlling and managing asthma are vital for transferring knowledge from pharmacists to clients since they improve their self-care.

METHODS

Study design

A cross-sectional design was utilized for this study to assess the knowledge and practices of community pharmacists in asthma management in the Accra Metropolis of the Greater Accra Region, Ghana. Data was collected over three months, from Jan to March 2022. The reasoning for using a cross-sectional study is that it will

collect data at one time, providing an opportunity to analyze relationships between phenomena under study with the level of certainty needed. This design would be helpful in the evaluation of the knowledge levels, practices, and barriers in healthcare settings. This study was an extension of an initial published research.¹

Study setting

The study was conducted in the Accra Metropolis, an urbanized area of the Greater Accra Region of Ghana. Ghana's capital city, Accra, is a growing center of healthcare services, including community pharmacies. Consequently, community pharmacists in this region are well situated to render healthcare services for managing acute and chronic conditions such as asthma. The study targeted community pharmacies, where pharmacists are important in in-patient care and medication management.

Study population

The study population was all registered community pharmacists actively practicing in Accra Metropolis. They are licensed commercially by the Pharmacy Council of Ghana and work at the community pharmacies, the first point of contact for patients with asthma and other respiratory conditions. An indication face population used for the study was to generate knowledge concerning asthma pharmacists' practices, their understanding of these practices, and the hurdles pharmacists face in asthma care.

Inclusion criteria

Pharmacists registered with the Pharmacy Council of Ghana and active community pharmacists in community pharmacies within the Accra Metropolis were assessed. If participants were unavailable during the data collection time, they had to provide consent and participate.

Exclusion criteria

Those practicing outside Accra Metropolis, pharmacists not registered with the Pharmacy Council of Ghana, and those unavailable or unwilling to participate during the study period were excluded. Furthermore, respondents were not from institutional or industrial settings but from community-setting pharmacists only.

Sample size

The sample size was determined using Cochran's formula for sample size calculation in cross-sectional studies:

$$n_0 = z_2^2 pq / d_2$$

Where; $Z = 1.96$ (standard normal deviation at 95% confidence level), $p = 0.88$ (proportion of pharmacists agreeing on the feasibility of increased

practice scope, based on previous studies), $q = 1 - p = 0.12$, $d = 0.05$ (margin of error).

The study's target population included 1751 community pharmacists within the Greater Accra Region. Using Cochran's correction formula for populations less than 50,000, the sample size was increased to 177 pharmacists to improve data reliability. Pharmacists were selected using convenience sampling based on their ability and willingness to participate. The cost-effective approach allowed for fast data collection in an urban environment.

Data collection

The primary data collection tool was developed using a structured questionnaire. This was based on evidence from existing literature, including the Global Initiative for Asthma (GINA) asthma management guidelines and Ghana's Standard Treatment Guidelines. The questionnaire was divided into four sections:

Demographic characteristics: This section captured the participant's age, gender, education level, years of practice, hours worked per day, and average patient load.

Knowledge of asthma management: Asthma pathophysiology, triggers, medications, and monitoring techniques were also questioned.

Daily management practices: This section assessed pharmacists' routines, including history taking, inhaler technique assessment, adherence, and side effects.

Barriers to effective asthma management: The questions identified challenges such as a lack of resources, time constraints, training gaps, and Infrastructure limitations.

Instrument pretesting

The questionnaire's relevance, clarity, and reliability were tested with 10 community pharmacists in the Eastern Region of Ghana. The pretest led to minor modifications to remove ambiguities and increase the questionnaire's validity, which was then revised and finalized for data collection.

Data collection procedure

Data was collected manually over four weeks. Two trained research assistants supported the primary investigator in administering the questionnaires. Before distribution, each participant explained the purpose and objectives of the study, and the participant signed informed consent.

The members were given enough time to answer the questionnaire and received the completed forms in return, achieving a high response rate. The questionnaires did not contain names or pharmacy details to achieve confidentiality, as they must not identify the people.

Data management

Before analysis, the data collected were reviewed for completeness and accuracy. The data set included only those questionnaires which had no errors in the questionnaire. Data was entered into Microsoft Excel 2016 and then exported to STATA I/C version 23 for analysis. Confidentiality of all digital data in a password-protected computer was stored.

Data analysis

The data was analyzed using descriptive statistics. Frequencies and percentages were calculated for categorical variables, and the results were presented as frequency tables, bar charts, and graphs. For the knowledge assessment, responses were graded as follows: 1) Good Knowledge: Scores above 80%, 2) Moderate Knowledge: Scores between 50-79%, 3) Poor Knowledge: Scores below 50%. As with daily management practices, classifying which practices were good or poor was based on adherence to 'established' guidelines. By ranking the barriers, the most frequently encountered problems were identified.

Ethical considerations

The study was approved by the University of Ghana School of Pharmacy ethics committee (UGSOPEC/AC2021-2022/017). All participants gave informed consent, making participation voluntary. Throughout the study, confidentiality was maintained, and the participants were assured that their responses would only be used for academic purposes. The study followed ethical principles, including respect for autonomy, beneficence, and non-maleficence.

Quality control

To ensure data reliability and validity, a three-day training program was conducted with research assistants to administer the questionnaire and solve participants' queries. A pretest refined a questionnaire to remove ambiguities. The data entry was checked for errors, and inconsistencies were resolved by cross-referencing the original questionnaires.

RESULTS

Demographic characteristics

The sample comprised 177 community pharmacists in the Accra Metropolis, representing the region's pharmacy profession. Table 1 describes the variables and frequency of the pharmacists included in this study.

Age and gender distribution

A greater proportion of participants were aged between 21 and 30 (42.37%), which indicates the viability of

younger professionals in this field. Here, pharmacists aged between 31 and 40 constituted the next largest grouping (27.12%), though a smaller number of participants was present in older groups (41-50 years: 23.73%; above 50 years: 6.78%). The younger predominance of pharmacists may mean a growing workforce has recently entered the profession.

Nearly fifty-six percent (55.93) of respondents were male pharmacists, while 44.07 percent were female pharmacists. There is a slight gender disparity in this distribution, as the pharmaceuticals profession (represented in this study area) mainly serves males.

Table 1: Demographic characteristics.

Variables	Frequency	Percentage
Age		
21-30 years	75	42.37
31-40 years	48	27.12
41-50 years	42	23.73
Above 50 years	12	6.78
Sex		
Male	99	55.93
Female	78	44.07
Educational background		
B. Pharm	129	72.88
Pharm D	21	11.86
Masters	27	15.25
Years of pharmacy practice		
Less than 5 years	60	33.90
5-9 years	60	33.90
10-14 years	18	10.17
15-19 years	27	15.25
20 years and above	12	6.78
Maximum hours of work daily		
6-8 hours	113	63.84
9-11 years	15	8.47
12hours & above	49	27.68
Average number of patients daily		
Less than 20	22	12.43
20-39 patients	48	27.12
40-59 patients	64	36.16
60-79 patients	13	7.34
80 and more	30	16.95
Total	177	100

Educational background

A strong foundational education in pharmacy is the norm, as most participants (72.88%) had a Bachelor of Pharmacy (B.Pharm) degree. Less than a proportion (11.86%) had a Doctor of Pharmacy (Pharm D) degree; however, a master's degree (15.25%) made up less than a proportion. Postgraduate qualifications among respondents represent specialization and professional development within the community pharmacy workforce.

Years of practice

Their professional experience differed significantly, ranging from 33.90% with less than five years, 33.90% with 5-9 years, and 33.90% with more than 10 years of experience. A smaller proportion (10.17%) had been in practice between 10 and 14 years, another (15.25%) between 15 and 19 years, and only 6.78% had been in practice for 20 years or more. This trend underlines the youthfulness of the profession in Greater Accra, the most being early or mid-career pharmacists.

Work hours and patient volume

Most pharmacists worked 6-8 hours a day (63.84%), followed by a smaller percentage who did more than 9-11 hours (8.47%) or 12 hours or more (27.68%). Overall, the average daily number of patients served by the pharmacists was 40-59 patients (36.16%), (20-39, 27.12%), and (80 or more, 16.95%). Significant activity is going on in community pharmacies in terms of patient load, as represented in this study.

Knowledge about asthma and how it is managed

Pharmacists' knowledge of asthma as a chronic disease and their familiarity with key management guidelines were assessed. 100% of respondents correctly identified asthma as an airway hyperresponsive and obstruction condition that can be appropriately treated. This finding suggests a universally strong foundational understanding of asthma pathophysiology. Furthermore, 93.22% of respondents admitted that genetic predisposition to

allergens is one of the major causes of asthma's development. This signifies awareness that asthma reflects a multifactorial illness with triggers.

Diagnostic and monitoring tools

About 94.92% of pharmacists were familiar with using peak expiratory flow (PEF) meters, a vital instrument for following pulmonary function in asthmatics. It is a good sign of how well-aware pharmacists can integrate objective measures into asthma management.

Of the pharmacists, 55.93% have good knowledge of asthma management, scoring more than 80% based on cumulative scores from knowledge assessments. Further, 42.37 participants exhibited moderate knowledge (50–79%), while only 1.69 had little knowledge (below 50%). Community pharmacists in Greater Accra generally have a strong knowledge base but still have the scope to raise knowledge levels among those with poor and moderate levels of knowledge.

Asthma care management practices

Strengths and gaps were noted in the daily practice of pharmacists in asthma management, as observed and explained in Table 2. About half of the pharmacists carried out detailed history-taking and physical examinations for asthma patients (57.56%). Although this is excellent news, it also suggests that many pharmacists (42.37%) may not make these crucial steps and may miss important information that is required to manage patients optimally.

Table 2: Asthma management practices.

Questions	Yes (%)	No (%)
Do you perform a detailed history examination for asthma? (Total=177)	102 (57.56)	75 (42.37)
Do you identify the modifiable risk factors for poor asthma outcomes? (Total=177)	153 (86.44)	24 (13.56)
Do you check if the patient has a written asthma plan? (Total=177)	33 (18.64)	144 (81.36)
Do you check the patient's inhalation technique? (Total=171)	126 (73.68)	45 (26.32)
Do you ask patients about their preference for asthma treatment? (Total=174)	105 (60.34)	69 (39.66)
Do you ask the patient about the side effects of their treatment? (Total=177)	138 (79.31)	36 (20.69)
Do you open an empathic discussion with patients about their adherence? (Total=174)	138 (79.31)	36 (20.69)
Do you advise patients to regularly take their ICS, as that might worsen their asthma medications? (Total=177)	87 (49.15)	90 (50.85)
Do you advise patients to discuss this with you before stopping any of their education? (Total=177)	135 (76.27)	42 (23.73)
Do you teach patients about self-monitoring symptoms? (Total=177)	138 (77.97)	39 (22.03)

Counselling and patient education

Most respondents (73.68%) reported practicing patient education, including assessing inhalation techniques, and (79.31%) discussing treatment side effects. Importantly, these practices ensure safe use and adherence to treatment plans.

However, just 49.15% of pharmacists advised patients on the continual usage of inhaled corticosteroids (ICS), the basis of asthma maintenance treatment. This gap suggests that improved counselling efforts are needed regarding ICS adherence, especially as part of long-term asthma control.

Adherence to patient preferences

Only 60.34% of pharmacists asked their patients if they followed management plans, while 79.31% discussed adherence to management plans with their patients. Shared decision-making is a limited focus, which may impair patient engagement and satisfaction with care.

Asthma action plans

Asthma action plans were noted as one of the gaps that practices don't attend to. Fewer than one-fifth-only 18.64 percent-checked to see if patients received written action plans, which are suggested tools to help patients navigate self-management and avoid an exacerbation. The low uptake of this practice indicates opportunity to improve alignment of pharmacy practice with existing guidelines.

Practices as a classification

The aggregated response scores revealed that 65.87 percent of pharmacists practiced good management practices, and 34.13 percent engaged in poor practices. These results indicate that while most pharmacists do pretty well in key areas of asthma care, there are significant opportunities to create standardization and improve across the board.

Barriers to asthma management

Several barriers were identified to pharmacists' ability to provide optimal asthma care.

Structural and resource limitation

81.4% of respondents responded that this was the most significant barrier to asthma care. Absent these structured guidelines, pharmacists may not provide consistent and evidence-based care.

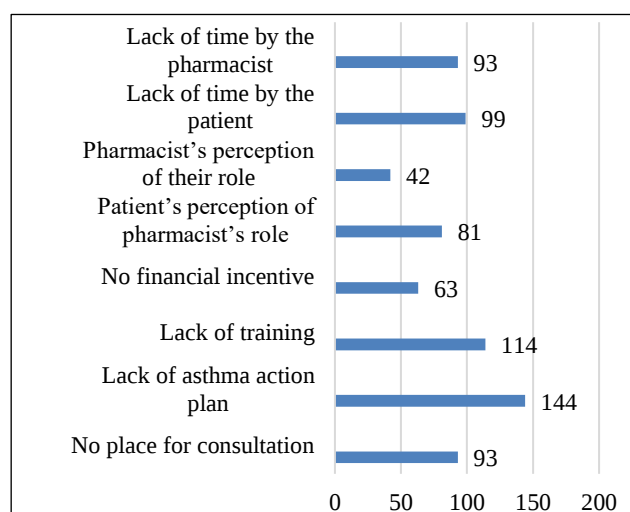


Figure 1: Barriers to appropriate asthma management.

In addition, only 52.5% indicated that the pharmacies did not have a designated consultation area. Because chronic disease management often requires private, detailed consultations, this infrastructural limitation limits pharmacists' ability to conduct them.

DISCUSSION

The results of the study were generated from a diverse set of respondents. Young people between the ages of 21 and 30 comprised most respondents. Several young people are relatively interested in this field of community pharmacy. Yet men were most of those responding. The findings show that many had bachelor's degrees, although several had master's and doctoral degrees. The lower-than-average job experience of most respondents is compensated for by a degree of schooling. The results show that this pharmacist set in place workplace conditions that allowed more than half of the study's participants to work six to eight hours per day, thereby improving the possibility of patient interactions. Few worked 9 to 11 hours; fewer worked 12 or more daily. It was found that, on average, most patients were seeing 40-59 patients daily.

Asthma and asthma management

The results demonstrate that most patients have adequate asthma management and control knowledge. The fact that most respondents had a bachelor's, master's, or doctoral degree is higher than average, but this makes perfect sense because the population being studied is educated mainly in the first place. This result supports previous work emphasizing the importance of community pharmacists' training and experience in their duties. According to pharmacy schools' recommendations, pharmacists know how to use the acquired knowledge and skills in the academic setting to work and provide patients with efficient, safe, and evidence-based healthcare.²⁰ Their extensive exposure allowed them to live out their classroom learning, build professional and personal qualities, and forge links with clients.²¹ The number of clients witnessed was proportionally counted in the daily time.

The answers given by respondents to the different questions were satisfactory. For example, "therapy helps to relieve asthma attacks that are characterized by airway blockage and hyperresponsiveness." For all other questions, 99.8 percent of respondents answered correctly. That pattern continued when the question read, "asthmatic attack is a result of the interaction of various components of the inflammatory system (inflammatory mediators and cells)." According to the GINA (2022) definition of asthma, it is 'a common chronic illness of the airways characterized by a variable and recurrent pattern of symptoms, airflow obstruction, and bronchial hyperresponsiveness.'

The respondents were able to tell us how asthma should be managed. Respondents demonstrated how criteria for assessment and monitoring are to be used. The criteria for diagnosis, evaluation, severity of symptoms, and degree of asthma control are used to monitor the achievement and maintenance of asthma control. These criteria include objective tests, physical exams, patient histories, and patient reports. This is validated by Mohammed et al. (2016) and Mes (2019). With medicine, environmental sectors, co-model illness management, and education for a collaborative treatment approach to asthma.^{22,23} Responders also knew approximately which inhalers might benefit patients. Hsu and Bajaj (2021) found that the main classes of drugs used to treat respiratory diseases, including bronchial asthma and chronic obstructive pulmonary disease (COPD), are beta-2 adrenergic agonists. They mimic the actions of catecholamines such as norepinephrine, epinephrine, and dopamine on an autonomic response in the body.²⁴ Beta-2 agonists have the most significant effect on the smooth muscle of the uterus, gut, airway, and systemic vasculature. Therefore, the development emphasis has been on the clinical implications of this medication class's in vitro capacity to change these target organ systems. Respondents generally have the necessary knowledge of asthma and the guidelines for asthma management.

Asthma management practices

Pharmacists use some methods to treat and control asthma in their pharmacies. They recorded patient reports, said half did more than 50% of the time, and more than half said they examined patients with asthma, performed objective testing, etc. The literature related to the diagnosis and assessment of asthma, as well as monitoring to assess the attainment and maintenance of asthma control and the attainment of the severity of asthma, is related to reducing the severity of asthma using this medicine through control of environmental factors, comorbid diseases and education for a partnership in asthma treatment.

We found results of the study indicating a close correlation of evaluation and monitoring tasks with concepts of severity (inherent intensity of disease process), control (degree of minimizing asthma manifestations, function impairments and risk-averse events, and attaining the goals of treatment), and responsiveness (simplified attaining control by treatment). Essentially, however, respondents informed their clients about the modifiable risk factors leading to ineffective asthma control. However, not all the responders reviewed their customers' written asthma management plans before treatment in the neighborhood pharmacies. Over half the responders said they make observations of their patient's breathing before giving treatment. Before management, most respondents asked their patients about the side effects of therapy and treatment choices.

The respondents talked with patients about their adherence, according to the study. Patients must also recognize and avoid triggers and receive and maintain regular or best long-term lung function (MOH, 2017). Community pharmacists must develop good relationships with patients, families, and other medical providers (MOH, 2017) to educate patients effectively. Non-pharmacological treatment reduces exposure to known allergens and triggers like dust (dust mites) and smoking, with training on using devices and asthma self-management. Despite this response, fewer than half of the responders recommended that patients use their inhaled corticosteroids daily (ICS). Most respondents also suggested that their patients monitor their symptoms, and if they stop taking any medication, they should be recommended to talk about it with them first.

Modified habits using patient education acquired with self-management skills provide better results. Patient education about self-management, adequate behavioral changes (EPR-3, 2007), skilled care, and regular professional reviews are key to maximum outcome improvement. Control of the disease can be improved by active patient participation in self-management, consisting mainly of self-management of environmental trigger factors and steps for therapeutic modification. According to EPR-3 (2007), the response to management or control is the aim of the patient and healthcare professional. Having adequate self-management skills may help the patient avoid being hospitalized and prevent the healthcare system from having to pay for asthma exacerbation management.

Appropriate management barriers for asthma

The challenges identified with asthma care and control by this study were a few. The results showed that the absence of asthma action plans in community pharmacies significantly impedes adequate therapy. The results also indicated poor training is a barrier to reasonable asthma control. Those barriers to the implementation of asthma programs, as identified by Pharmacists who participated in the study, include the lack of time. Models are also required to incorporate interventions in the dispensing process. The finest training courses are problem-solving skills, device technique, and counselling.²⁵ If consistent treatments are to be carried out for every patient and pay is paid for pharmacist services, a shift toward 'institutionalizing' routine asthma interventions or patient contact is necessary.

Furthermore, most respondents found it challenging to ensure all applicable management rules were observed owing to the absence of a particular space where they could be consulted. Other obstacles include patients' beliefs that clinic pharmacists are not responsible for managing their asthma, lack of financial incentives to follow regulations, and pharmacist beliefs that pharmacists are not responsible for managing their patient's asthma.

The study reveals a mixed picture of asthma management strengths and challenges among Greater Accra community pharmacists. These findings have implications for targeted interventions to improve practice gaps, strengthen training, and enhance resources to assist pharmacists in providing adequate care to patients with asthma.

This study has some limitations. These include self-reported symptoms, difficulty capturing real-life asthma fluctuations, the potential for bias in pharmacist selection, challenges in differentiating asthma from other respiratory conditions, and the limitations of lung function tests in accurately reflecting asthma severity.

CONCLUSION

According to the findings, most of the respondents were men. Given their level of education, most pharmacists also acquired a Doctor of Pharmacy degree in tandem with a Bachelor of Pharmacy degree. In addition, some of the study's pharmacists hold master's degrees. The findings suggest that respondents had enough understanding of asthma management. This finding supports previous research, which indicates the worth of pharmacy training and the expertise of community pharmacists in performing their tasks. Over half of respondents said they take patient histories, objectively test asthmatic patients, look at them, and report what patients say. The findings show respondents were generally knowledgeable about asthma and its management guidelines. While most pharmacists were practicing according to guidelines, some were unfamiliar with any guidelines and practiced as they deemed fit. The findings further conclude that there is a lack of asthma action plans in community pharmacies, inadequate training on how to handle asthma cases, lack of designated places for consultation, lack of financial incentives to adhere to regulations, inappropriate assumptions made by patients about the role of pharmacists in asthma management, and pharmacists' relinquishing their responsibility to manage asthma cases of their patients.

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