

OVER-DIAGNOSIS OF CHILDHOOD ASTHMA BY MEDICAL RESIDENTS: WHO IS TO BLAME?

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ABSTRACT

Background: Asthma is a common chronic childhood illness and results in considerable morbidity for sufferers. It also imposes serious socio-economic burden on families and the healthcare system. This leads to a depletion of scarce resources. To minimize these effects, proper diagnosis of asthma is important.

Objective: To evaluate the ability of medical residents (doctors in training) to effectively and accurately diagnose asthma.

Method: A semi-structured self-administered questionnaire on asthma management was filled out by medical residents from the six geo-political zones participating in an update course in Nigeria in August 2009.

Results: Of sixty-four residents who completed the questionnaire, 28 (43.8%) were males and 36 (56.2%), females. Post graduation years (mean \pm SD) and range were 6.47 ± 2.2 and 2 - 12 years respectively. The burden of asthma as seen in practice areas was occasionally (35, 54.7%), frequently (28, 43.8%) and rarely, (1, 1.5%). No medical resident reported "Not at all". Of the 64 residents, (10, 15.6%) practiced appropriate method for asthma diagnosis, while (54, 84.4%) practiced inappropriate method for diagnosis. Nine (14.1%) residents reported availability and use of spirometer in their practice centre. Years post graduation and gender did not correlate significantly with appropriateness of asthma diagnosis; $p = 0.616$, $p = 0.505$ respectively.

Conclusion: Study supports over-diagnosis of asthma by medical residents and consequently mis-management. Capacity building in area of asthma management will be enhanced by emphasis on asthma management in undergraduate curriculum, residency training and continuous medical education on the proper management of asthma.

Key Words: Asthma, over-diagnosis, Medical residents.

INTRODUCTION

Asthma is a chronic inflammatory disease of the airway that is characterized by airway hyper-responsiveness and lability. The excessive airway lability manifests as variable airway sizes. At the extreme there maybe sudden narrowing. This constriction of the airway can be induced and reversed.¹⁻³ This feature of asthma results in periods of exacerbations and remission of symptoms.¹⁻³

The clinical hallmark of asthma is the intermittent or acute exacerbation of symptoms. This acute exacerbation may be occasional or frequent depending on the severity of the disease. Children with asthma may present with episodic cough, chest tightness, wheezing and breathlessness. These symptoms are worsened during acute exacerbation.¹⁻³ This disease may be so severe in certain individuals

that they present with very frequent acute exacerbations or abnormal lung functions even when not having such exacerbations. These exacerbations with abnormal lung function findings may be induced by physical exercise. Symptoms may also be more frequent at night. Physical examination may reveal chest deformities, limitation of physical activity and poor sleep at night. Asthma may occasionally be fatal. However, these features of asthma may be seen in other conditions, especially in the very young, where bronchiolitis is a close mimic of asthma. Other conditions that may mimic asthma include; foreign body aspiration, lymphomas, Tuberculosis, helminthiasis etc.¹⁻³

Hence, adequate diagnosis of asthma is essential to enable appropriate institution of management options. Methods to diagnose asthma include

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bronchodilator responsiveness, demonstration of diurnal variability etc. Using symptoms only to diagnose asthma most commonly leads to a misdiagnosis.⁴ On the other hand, considering the lack of local names for asthma among most African tribes, every cough that is episodic and associated with wheeze is labelled as asthma. Such diagnosis is usually sustained by the attending physicians (especially if not an expert). The scenario is even worse in situations where such patients are first seen by non-expert physicians in General Hospitals and Private Hospital and later referred as cases of asthma to the experts, with the expert sustaining the referring diagnosis.^{5,6}

These cases of over-diagnosis and mis-diagnosis of asthma have obviously added to the already high asthma burden in our communities. This is even more painful considering the fact that these children are wrongly labelled asthmatics thereby preventing them from being further investigated and properly diagnosed for the correct disease condition. These children following the mis-diagnosis are wrongly placed on lifelong treatment (which they do not deserve) and results in a huge financial drain on the family and the healthcare system. Along this line, these same children following wrong labelling as asthmatics are restricted from physical activities with attendant marked emotional disturbance and reduction in the quality of life.⁵⁻⁸

For asthma to be properly diagnosed, physicians (both experts and non-experts) must be taught the principle of asthma diagnosis, which mainly involves the demonstration that there is airflow limitation and that this airflow limitation is due to bronchoconstriction, can be induced and can also be reversed, and there is excessive variation in the calibre of the airway at different times of the day.^{2,4}

This study is aimed at evaluating the ability of medical residents (doctors in training) to effectively and accurately diagnoses asthma. This is important considering the fact that this group of doctors eventually will become experts who will be responsible for teaching others the appropriate management of asthma.

MATERIALS AND METHODS

This study was carried out in Ibadan, Nigeria in August of 2009. The study population was made up of all the Resident Medical Doctors taking part in the update Course of the West Africa College of Physicians. These doctors were from different tertiary centres in Nigeria representing the six geo-political zones of the country.

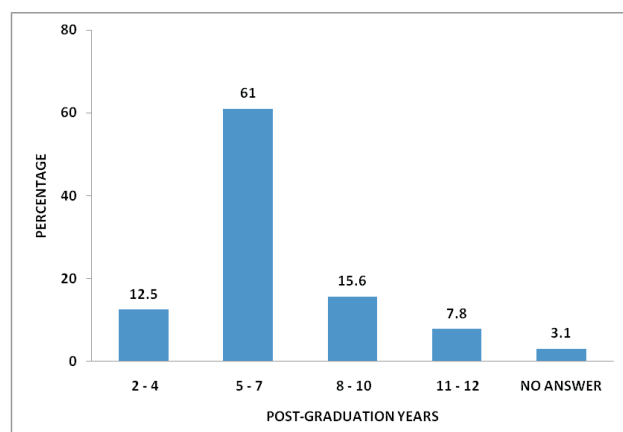
A semi-structured self-administered questionnaire was used for this study. The questionnaire was made up of nine separate questions. Questions 1 – 5 were on the characteristics of the participants, question 6 was on the type of patient they manage whether adult or children or both. Question 7 was on how frequently they saw and manage patients with asthma and this was a closed question that requires them to respond using Frequently, Occasionally, Rarely and Not at all. Question 8 was on methods of initial diagnosis of asthma in their practice and this was another closed question that included options like; Patient-diagnosed, Mother-diagnosed, and Physician-diagnosed, Use of signs and symptoms, Based on family history and Use of special equipment/test. Question 9 was to find out the availability of certain equipment required for asthma management in their various facilities and this included Pulse Oximeter, Spirometer, Peak Flow Meter, Nebulizer, Spacer device, Ventilator and Oxygen delivery equipment.

The questionnaires were given to all the residents present at the update and were filled by the residents themselves. Out of about sixty-eight (68) questionnaires that were given out, sixty-four (64) were correctly filled and returned. The data were entered into the Microsoft Excel software and then exported to the SPSS version 11 for analysis.

RESULTS

Sixty-four residents completed the questionnaire; 28 (43.8%) were males and 36 (56.2%) females. Post-graduation years (mean \pm SD) was 6.47 ± 2.2 years with range 2 – 12 years. The distribution of the post graduation year was as shown in figure 1.

Table 1 shows the burden of asthma as seen in Residents' practice area. Majority, 35 (54.7%) reported burden of asthma as seen in their practice area to be occasionally, while frequently was 28 (43.8%) and rarely, one (1.5%). No Resident reported "Not at all" for asthma burden. Of the 64 residents, only 10 (14.1%) practiced determined reversibility of airflow limitation in the diagnosis of asthma, while the remaining 54 (85.9%) diagnose asthma using different inappropriate methods. However, some of the respondents used more than one inappropriate method. The use of appropriate method of diagnosis however does not correlate significantly with years' post-graduation and gender ($p = 0.616$, $p = 0.505$) respectively. High rate (85.9%) of asthma mis-diagnosis implies asthma over-diagnosis by Medical Residents in Nigerian training institutions. Nine (14.1%) and 34 (53.1%) residents respectively claimed availability of spirometer and peak expiratory flow meter in their centres.

FIGURE 1: POST-GRADUATION YEARS**Table 1:** Burden of asthma as seen in Residents' practice area

Burden of asthma	Frequency	Percentage
Frequently	28	43.8
Occasionally	35	54.7
Rarely	1	1.5
Total	64	100

Table 2: Method of Asthma Diagnosis

Method	n=64 (%)*
Symptoms and physical examination	62 (96.9%)
Health personnel diagnosis (referral)	30 (46.9%)
Mother/self diagnosis	9 (14.1%)
Based on family history	29 (45.3%)
Determined reversible airflow limitation (use of special instrument)	10 (14.1%)

*Multiple methods in some cases

DISCUSSION

Inappropriate diagnosis of asthma by resident doctors in this study (85.9%) would have consequently resulted in overtreatment or outright wrong treatment of those that would be wrongly diagnosed. From this study, majority of those that diagnosed asthma wrongly based their diagnosis of asthma on the presence of episodic cough, wheeze, chest tightness and difficulty with breathing. These symptoms are however not specific for asthma.

The high rate of inappropriate diagnostic practice compares with the study of Mehta *et al.*⁶ who report asthma misdiagnosis in 11/18 (61%) of the patients studied⁶. Furthermore, in line with findings from our study, they reported that, prior to their study, none of the patients had a lung function test, and that most of the diagnoses were based on physician referrals and presence of symptoms suggestive of asthma.⁶

However, several other studies have, although

reported over diagnosis in a smaller percentage of patients when compared to the current study. One of such was the study of Aaron in 2008.⁵ Although, the study was in adults, he reported over-diagnosis in 31.8% of the 242 obese subjects out of a total of 496 subjects, and 28.7% among the remaining 254 non-obese subjects. The differences in the rate of asthma over-diagnosis between the current study and that by Aaron, may largely be due to differences in the study population.

From the foregoing, asthma over-diagnosis and mal-treatment is widespread and has been reported in several studies from different continents,⁵⁻¹¹ reasons for such misdiagnosis, although not stated in the cited studies above may include;

- Lack of appropriate equipments/instruments in many hospitals including the tertiary centres for the correct diagnosis of asthma.
- None existence of written asthma management guidelines in many of the hospitals for the correct diagnosis of asthma.
- None existence of sufficient personnel versed in asthma management (pulmonologist or allergist).

The consequences of wrongly labelling a patient as asthmatic could be very severe in some instances. It varies from social effects on the patient to taking of unneeded drugs which may have some far-reaching side effects e.g. steroids.^{10,11}

Furthermore, over diagnosis and maltreatment of asthma may result in overstretching of health facilities. In addition, the attention of both health provider and caregiver are thus diverted away from the real problem of these patients, with possible fatal outcome.

CONCLUSION

The finding in this study showed that asthma is being inappropriately diagnosed by residents in Nigeria training institutions. Enhanced capacity building for Residents and other caregivers by concerned stakeholders e.g. Nigeria Thoracic Society (NTS) will obviate asthma over-diagnosis and mis-management.

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