GUIDELINE DEFINED ASTHMA MANAGEMENT IN CHILDREN: HOW COMPLIANT ARE GENERAL PRACTITIONERS

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ABSTRACT

Background: Asthma is a chronic debilitating illness in children. The management of this condition varies from place to place depending on the accepted guideline used in such areas. However, there is a global initiative on asthma management (GINA) that has unified all the local guidelines such that the management is almost the same worldwide. **Objective**: To determine the awareness of and adherence to the GINA Guideline in the management of asthma by private practitioners. **Methods**: Semi-structured self-administered questionnaires were given to general practitioners during one of their continuous medical education (CME) meetings on asthma facilitated by the authors of the study. The data so generated were entered in EXCEL and transferred to SPSS and analysed. **Results**: Out of the 50 respondents, 48 reported that they managed asthma. Six of the 50 respondents were aware of the existence and content of the GINA Guideline. However, only 2 doctors could correctly state how to treat children under-5 years according to the GINA guideline. In the case of children above-5 years, only those who could correctly treat children under-5 years also could treat children above-5 years with the GINA guidelines. No participant could correctly state the Guideline-Defined long-term management of asthma. **Conclusion**: Management of asthma by general practitioners does not follow the GINA Guidelines. There was also poor awareness by the doctors of the existence of the GINA guideline. There is need for frequent update programmes for general practitioners.

Keywords: Asthma, knowledge, inflammatory, private practitioners, severity, management.

INTRODUCTION

Asthma is a chronic inflammatory disease that causes a lot of morbidity in children.[1,2] The morbidity of asthma is mainly due to the frequent acute attack following exposure to triggers. This leads to narrowing of the bronchi producing its characteristic features including wheezing, breathlessness, chest tightness and cough.[1-3] According to the World Health Organization (WHO), about 300 million people suffer from asthma worldwide and causes more than 250,000 deaths annually.[4] It affects both children and adults of all ages and its prevalence is increasing particularly among children especially in industrialised countries.[1,2,4]

Most patients with asthma in Nigeria are likely to report to the general practitioners because this is the first point of contact with patients. It is at this level that diagnosis are made for the first time, mainly based on history of recurrent wheeze with cough in the presence of a positive family history.[4-6] In most cases, only those with possible complications are referred. However, some patient maybe diagnosed for the first time in tertiary health centres.[4-6]

There are different guidelines for the management of asthma globally,[1,7-11] however, the global initiative for asthma management (GINA) guideline which was launched in 1993 constitutes a global consensus on asthma treatment.[1] The GINA also provides a foundation for several other guidelines worldwide

which are regularly updated. The GINA guideline helps to synchronise and unify all the location guidelines such that the management of asthma is almost the same worldwide.[1] However, the awareness and compliance of private practitioners to the provisions of the GINA guideline has not been studied hence the need for this study.

Objectives: To determine the knowledge and compliance with the GINA guideline in the management of acute asthma by private practitioners in Benin City.

MATERIALS AND METHOD

Semi-structured, self-administered questionnaires were given to private practitioners during one of the continuous medical education meetings on asthma given by the authors in June 2016. The questionnaires were filled by those present and retrieved before the start of the meeting. Doctors that work only in private and missionary hospitals were recruited. Doctors at the meeting that work in government hospital and only do locum in private or missionary hospitals were excluded.

The questionnaire was divided into two sections. The first section was on biodata of the respondents and the others were questions based on GINA guideline 2011 correct management of acute asthma which is made up of the following steps; Resuscitate the patient, classify the patient, nebulise with salbutamol, give corticosteroids, give oxygen and intravenous fluids depending on severity. A correct answer is any one that contains the above basic steps. If some steps are missing the answer is said to be partially correct. And if none of these steps are mentioned but responses include the use of intravenous aminophyline or adrenaline, such response is said to be incorrect.

For the long term management of asthma, the five-step approach was adopted, this include (1) Establish a partnership with the patient including proper health education (2) Identify and avoid triggers (3) Have a written plan for the management of acute attack (4) Have a written plan for maintenance therapy (5) Special considerations including asthma and exercise and others, and food allergies. Under the maintenance drug therapy, the correct treatment was taken as responses that mentioned the use of medications based on the level of control starting with salbutamol for those with very infrequent attacks (less than once a month), inhaled corticosteroids for those with more frequent attacks (at least once a month) or uncontrolled asthma, with step up to either adding a leukotriene modifier or increasing the dose of steroids from low dose to medium dose (Step 2). Step 3 will involve the use of steroids with a long acting bronchodilator, while Step 4 may include the use of long term bronchodilator plus inhaled corticosteroids plus possible oral steroids and Step 5 should include the use of anti-IgE drugs like omalyzumap.

A correct answer for long term management of asthma included the five steps, even if the steps are not mentioned in detail, incomplete answer were those that went straight to maintenance drug therapy for asthma. If the response included the use of the step-ladder approach without mentioning the five-step recommended or the correct step-ladder approach to the drug therapy, such responses were taken as incorrect.

Regarding the knowledge of causes of non-response of acute asthma to management, a Likert like scale was used to score the six main causes of non-response; (1) presence of other co-morbidities e.g. pneumonia, bronchiolitis, foreign body, (2) incorrect diagnosis (3) tolerance to bronchodilator (4) acidosis (5) dehydration, (6) difficult-to-treat phenotype of asthma. Out of the six, any respondent that mentioned 4 is scored very good, 2 – 3 is scored good, and 0 – 1 is scored poor.

Data were entered into SPSS version 20.0 for analysis. Proportions of types of responses were expressed in percentages. The relationship of physician's ability to management asthma and certain continuous variables was tested with Spearman rho test.

RESULTS

General characteristics of subjects

A total of 50 physicians took part in the study consisting of 40 (80%) males and 10 (20%) females. Majority of the respondents (36.0%) had been practicing for 5 – 10 years. The distribution of the other respondents with respect to years of practice is shown in Table 1.

Table 1: General characteristics of subjects

Characteristics of Respondents	Proportion of	Percentage (%)
Total number	**50**	**100**
Sex		
1. Male	40	80
2. Female	10	20
Years of practice		
1. <5 years	14	28
2. 5 – 10 years	18	36
3. 11 – 15 years	11	22
4. >15 years	7	14
Place of practice		
1. Mission hospital	22	44
2. Private hospital	28	56
Rank of doctor		
1. Consultants (Non-paediatricians)	8	16
2. PMO	4	8
3. CMO	10	20
4. MO	18	36
5. NYSC/HO	10	20

NB: PMO = principal medical officer, CMO = chief medical officer, MO = medical officer, HO = house officer

When asked if they manage asthma; 48 (96%) agreed that they see asthma patients, while 2 (4%) said no. Out of the 48 that see asthma patients 10 (20.83%) agreed that they saw asthma patients more than once a week, 8 (16.67%) saw asthma patients at least once a week, 30 (62.5%) saw asthma patients at least once a month.

Awareness of Presence of GINA Guideline for Asthma Management

Of the 48 respondents that reported that they see asthma cases, only 6 doctors were aware of the presence of the GINA guideline for the management of asthma. The characteristics of these doctors are shown on **Table 2**.

Table 2: Factors affecting awareness of global guideline

		Awareness of global guideline		Total	P value
		Yes	**No**		
Sex	Male	4 (10.0)	36 (90.0)	40 (100.0)	0.384
	Female	2 (20.0)	8 (80.0)	10 (100.0)	
Place of practice	Private hospital	6 (21.43)	22 (78.57)	28 (100.0)	0.028
	Missionary hospital	0 (0.0)	22 (100.0)	22 (100.0)	
Rank of doctor	Consultants (Non-paediatrician)	0 (0.0)	8 (100.0)	8 (100.0)	0.253
	PMO	0 (0.0)	4 (100.0)	4 (100.0)	
	CMO	0 (0.0)	10 (100.0)	10 (100.0)	
	MO	2 (11.11)	16 (88.89)	18 (100.0)	
	NYSC/HO	4 (40.00)	6 (60.00)	10 (100.0)	
Years of practice	<5 years	4 (28.6)	10 (71.4)	14 (100.0)	0.05
	5 – 10 years	2 (11.11)	16 (88.89)	18 (100.0)	
	11 – 15 years	0 (0.0)	11 (100.0)	11 (100.0)	
	>20 years	0 (0.0)	7 (100.0)	7 (100.0)	
Total		**6 (12.0)**	**44 (88.0)**	**50 (100.0)**	

NB: PMO = principal medical officer, CMO = chief medical officer, MO = medical officer, HO = house officer

The appropriateness of treatment modalities of different categories of children with asthma by the physicians is shown in table 3 below.

Table 3: Appropriateness of treatment method of asthma exacerbation by respondents when compared to GINA Guideline 2011

Category of children	Response of respondents	Proportion	Percentage (%)
Underfive children	1. Correct treatment/ complete	2	4.2
	2. Incomplete treatment	18	37.5
	3. Wrong treatment	16	33.3
	4. Don't know	12	25
Children aged 5 years and above	1. Correct treatment/ complete	2	4.2
	2. Incomplete treatment	16	33.3
	3. Wrong treatment	18	37.5
	4. Don't know	12	25

The effect of the various physician characteristics on their ability to manage asthma is shown in table 4 below.

Table 4: Effect of physician characteristics on ability to manage asthma

Category of Patients	Variable	Spearman's Rho	P value
Under-five children	Years of practice	0.281	0.048
	Rank of doctor	0.203	0.157
	How often asthma patient are seen	0.401	0.005
Children aged 5 years and above	Years of practice	0.233	0.104
	Rank of doctor	0.165	0.254
	How often asthma patient are seen	0.366	0.011

Table 4 shows the correlation between the physician characteristics on their ability to manage asthma both in children below 5 years and those above 5 years. As shown on the table, how often asthma patients are seen have a high Spearman's Rho, which shows good correlation. This was closely followed by the years of practice by the physicians of underfive children. These were the characteristics with significant p values.

The treatment options as reported by the general practitioners is shown in table V below, which shows the various modalities used for treating acute asthma.

Table 5: Treatment options for acute asthma by the respondents

Treatment options	Number of Respondents	Percentage (%)
IV aminophylline slowly	24	50
Nebulised salbutamol only	6	12.5
Nebulised salbutamol + systemic steroids	8	16.7
Subcute adrenaline	10	20.8

Long-term management of asthma according to GINA guideline

When asked about maintenance treatment of asthma according to GINA Guideline, none of the 6 respondents who were aware of the GINA Guideline could clearly state the five principles of managing asthma and none could also state clearly the drug treatment of chronic asthma. None could clearly state the correct classification of asthma based on the level of control. Of the 48 respondents that saw asthma cases, 28 (58.3%) stated seretide as the first line approach to the management of chronic asthma, 2 (4.2%) mention aminophyline tablets in combination with prednisolone, 10 (20.8%) mentioned salbutamol tablet + inhaler, others are as shown in Table 6.

Table 6: Management of Chronic Asthma According to GINA Guideline

Variable	Proportion of respondents	Percentage (%)
Correct management	0	0
Partially correct management	0	0
Incorrect management	6	100
Prescription pattern		
Seretide only	28	58.3
Seretide + antibiotics	4	8.3
Salbutamol (ventolin) tablet + prednisolone	10	20.8
Aminophyline tablets + prednisolone tablets	2	4.2
Bradicanyl tablets + Septrin tablets	1	2.1
Piriton tablets + Salbutamol tablets	2	4.2
Don't know	1	2.1

DISCUSSION

Proper asthma management is a sinequanon for good outcome in children with asthma. There is need for synchronous management worldwide so that outcome can be globally compared.[1] The global initiative has been actively responsible for development of global guideline since 2002 and is saddled with the responsibility of synchronising the management of asthma worldwide.[1]

This study reveals that the awareness of the existence of GINA guideline is very poor among general practitioners. Only 6 practitioners reported ever hearing of the GINA guideline and describing the content. In terms of compliance, the number of general practitioners that adhere to the guideline in their management of asthma was very low. Several mode of treatment are still been used for both acute and long term management. This also agrees with findings from other centres.[5,6,12-19] In a study from South Australia, Coates *et al*.[6] reported substantial variability and important deficiencies in the management practice by general practitioners.[6]

In the index study, many of the general practitioners approach to the management of acute asthma did not agree with any known guideline, many of the general practitioners would use I.V amynophyline as a first line bronchodilator without assessing the severity or making any attempt to resuscitate the patient before the commencement of amynophyline. Still on the management of severe acute exacerbation, administration of oxygen is an important part of every guideline.[1-3,5] However in the index, only few physicians would commence the patient on oxygen along with the commencement of drug treatment, because many of the physicians believed that oxygen was only used in life-threatening situation. They did not see oxygen as part of the therapeutic package in the treatment of asthma.

Concerning the long term management of asthma in-between exacerbations, many of the respondents would use inhaled seretide solely as the initial and only treatment for asthma. This is completely contrary to the recommendation of the GINA guideline which recommend a stepladder approach to the management of asthma in children.[1] Several other drugs that are no longer in use in the management of asthma are still being prescribed (Table VI), these drugs includes like bradicanyl, aminophyline, salbutamol and piriton tables. Some of these drugs have been abandoned because they have systemic effect rather than local effect on the airway. For instance, aminophyline tablet has effect both on the airway and on the cardiovascular system, which make it to be

unacceptable as a drug used for long-term management of asthma. Bradicanyl which is a tablet form of terbutaline is a selective β2 adrenegic agent has been abandoned for the nebulised form which acts locally. None of the respondents mentioned the use of inhaled corticosteroids only. Another trend is the use of oral steroids and oral short-acting bronchodilators for the control of asthma during follow-up visits. Other agents like anti-biotics, anti-histamine and mucolitics which are not regularly used were also prescribed. These prescriptions not only increase the cost of managing asthma, but produce unwanted side effects and make achieving control difficult. This completely agrees with the findings of Fawibe et al, working among general practitioners in 6 states (3 from the north and 3 from the south) of Nigeria,[5] and other studies from other countries.[15-17]

In the index study, only 2 doctors could correctly manage acute asthma according to the GINA guideline and only 6 were aware of the guideline. The reason for this may not be more than some of the younger doctors may likely be taught in school while still in school than the older ones. This is because when most of the older doctors were in school the GINA was not in existence. Rather, then what was in place was individual guidelines.

The assessment of difficult to-treat asthma among the respondents showed that virtually every respondent would refer such case of asthma without any attempt at investigating such a patient. Similar report was given by several workers.[20-22] This survey has shown a huge gap in the awareness of Nigerian doctors in general practice concerning the present and the content of guideline in the management of asthma especially GINA guideline. This shows that the management of asthma by general practitioners in Benin City does not conform to any guideline, making assessment and evaluation of management of asthma difficult and the benefits of these guidelines not made available to the patient. Most doctors in this survey will still use I.V amynophyline as first line bronchodilator, a practice that has been long abandoned and may carry fatal outcome if not properly monitored because of the narrow therapeutic window of amynophyline.[23-26]

The use of oral steroids for both acute and long term management of asthma in this study also agrees with the study by Fawibe et al.[5] Respondents would prefer to use oral rather than systemic treatment in acute attacks which is not the recommendation of the GINA guideline.[1] Oral steroids in long term treatment also do not follow any guideline recommendation except in step 5 (severe persistent asthma). Another worrisome practice discovered is the common use of seretide by every respondent for every case of asthma. This practice is worrisome, considering the fact that there are different strength/concentration of seretide and the use of seretide on the GINA guideline is about the 3rd or the 4th level after the use of inhaled corticosteroids or combination of inhaled corticosteroids with a luekotriene modifier.[1] The picture of gradual ladder-like approach to the use of drugs in the long term management of asthma did not feature at all in this study.

An issue not mentioned at all by any of the respondents is the use of spacer which may be as effective as the use of nebuliser if properly used.[27,28] This may be due to the fact that many of the respondents were unaware of such a device or the fact that spacer devices were usually very scare and not easy to get. The challenge of spacer not been readily available is now been surmounted by attempts to use readily available local materials to produce spacers e.g. plastic soft drink containers.

It is important to point out the other aspect of long term management of asthma apart from drugs which were not mentioned by any of the respondents as part of managing long term asthma. For instance environmental manipulation is an important factor in the successful treatment of asthma.[1]This is because exposure to trigger which is usually in the environment plays a very important role in the initiation of asthma, therefore, proper environmental management ensures that the individual avoids the trigger which leads to a better asthma control.

From the foregoing it is obvious that despite the presence of well published and documented guidelines, these guidelines may not be available to the general practitioners except there is further

training and retraining of such cadre of doctors, such documents may not be well utilised in their practice. Therefore, there is need for regular training programmes on the GINA guideline for healthcare workers.

CONCLUSION

Although there is presence of numerous, well-written and documented guidelines typified by a GINA directed at synchronising the management of asthma worldwide, with a goal of controlling asthma and the patient living normal life, these guidelines need to be introduced and properly inculcated into the practice of various cadre of doctors so as to change the current non-guideline based approach to the management of asthma in Nigeria.

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