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A survey of asthma management practices and implementation of global initiative for asthma guidelines among doctors in Jammu and Kashmir

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Abstract---Background: Bronchial asthma is a global health problem that causes significant morbidity and mortality in all age groups. Global Initiative for Asthma (GINA) seeks to standardize the care asthma patients receive. The knowledge, attitude, and practices of doctors in Jammu and Kashmir, regarding asthma management and determination of the extent to which they abide by GINA guidelines in their management of asthma was assessed in the present study. Methodology: A self-administered questionnaire was used to obtain information from the participants regarding knowledge of asthma prevalence, asthma risk factors, and management practices. Results: Out of 320 questionnaires, 250 responses were recorded giving a response rate of about 78.13%. About 67.6% were men, and the most common age group was 30–39 years (52.4%). Of a total of 250 respondents, 167 (66.8%) knew about GINA guidelines for asthma control whereas only 68 (27.2%) apply GINA guidelines in patient care, making it a cause of concern. Conclusion: There is an urgent need for awareness among Doctors in Jammu and Kashmir regarding

implementation of GINA Guidelines in patient care. Also, improvement and standardization of asthma care are recommended.

Keywords---survey asthma management practices, implementation global initiative, asthma guidelines.

Introduction

Asthma is a heterogeneous disease, usually characterized by chronic airway inflammation defined by the history of airway inflammation, such as wheeze, shortness of breath, chest tightness and cough, that vary over time and in intensity, together with variable expiratory airflow limitation¹. This respiratory disease affects 1-18% of population in different countries¹. With the advent of better techniques and guidelines in the recent past, there has been a paradigm shift in management of diseases like Asthma. Despite all the advancements, mortality from asthma has been increasing steadily worldwide.² A number of Asthma management protocols have been published in the recent years with the main aim of improving diagnosis, management and prevention of asthma by stimulating research, and providing evidence-based educational resources for worldwide use. In 1993, GINA (GLOBAL INITIATIVE FOR ASTHMA) was launched which aimed at providing better care to patients suffering from asthma. However, there have been limited studies undertaken to assess the effect of the guidelines published by GINA on actual practice. This study was undertaken to assess the knowledge, attitude, and practices of doctors in Jammu and Kashmir, regarding asthma and the extent to which they abide by GINA guidelines in the management of asthma.

Methodology

Study design, setting, and population

This descriptive cross-sectional survey was conducted among doctors practicing in Jammu and Kashmir, India. The participants included house surgeons, medical officers, resident doctors and consultants posted in different regions of the state.

Data Collection

A self-administered questionnaire was used to obtain information from the participants and was sent via internet (Email id and social media). The questionnaire was validated using content validity and the construct and content validity of the questionnaire was evaluated by the statistician. Based on the prevalence of Asthma globally, sample size was calculated to be 250 approx using the formula $n = [DEFF * Np(1-p)] / [(d^2 / Z^2_{1-\alpha/2} * (N-1) + p * (1-p)]$.

Data analysis

The collected data was thoroughly screened and entered into MS excel spreadsheets and analysis was carried out using Statistical Package for Social

Sciences (SPSS) version 20 and Percentages were calculated for categorical variables.

Result

Sociodemographic Characteristics

Of the 320 forms sent via social media, a total of 250 responses were recorded with a response rate of about 78.12%. The sociodemographic characteristics of the participants are presented in Table 1. Of the 250 participants, males comprised 169 (67.6%) and females 81 (32.4%). Most of the respondents were aged from 30 to 39 years (52.4%). Consultants (46.8%) comprised most of the participants. The median duration of medical practice was 6-10 years.

Knowledge of asthma and risk factors

As far as perception of the prevalence of asthma in the last 30 years is concerned, the majority (74.8%) of the doctors reported asthma prevalence to be on the increase, (10.8%) said it had decreased while (14.4%) were of the opinion that it had remained unchanged. Regarding the risk factors for asthma, the variables that were more frequently identified were genetics (52.4%), smoking (36%), diet (11.6%), air pollution (56.4%), while low birth weight (12.8%), occupation (13.2%), urbanization (9.6%), were less frequently identified. Mast cells (55.2%) and eosinophils (51.2%) as the cells involved in the cellular mechanism of asthma were identified by an overwhelming majority (Table 1).

Attitude and practices regarding asthma management

Attitude and practices of the respondents regarding asthma management are summarized in Table 2. 238 (95.2%) participants reported that they had seen a spirometer, but only 163 (65.2%) affirmed use of spirometry in asthma diagnosis. Similarly, 189 (75.6%) doctors had seen a peak flow meter, but only 148 (59.2%) reported use of peak flow meter in asthma diagnosis. When the respondents were asked if their asthma patients keep a peak flow diary, only 75 (30.0%) gave a positive response. The reasons reported for the limited usage of peak flow diary were as follows: the patients have not been told about it 112 (44.8%), lack of personal peak flow meters 81 (32.4%), and doctors do not know about it 48 (19.2%). About 167 (66.8%) of the respondents knew about GINA guidelines for asthma control. 183 (73.2%) regularly reviewed patients inhaler technique, 163 (65.2%) made use of adult ACT while 151 (60.4%) of the respondents regularly review asthma action plan with their patients.

Table 1

S.no	Sociodemographic factors		N (%)
1.	Sex	Male	169 (67.6)
		Female	81 (32.4)
2.	Age	20-29	48 (19.2)
		30-39	131 (52.4)
		40-49	40 (16)

		>50	31 (12.4)
3.	Professional designation	Medical officer	51 (20.4)
		senior resident	40 (16.0)
		Consultant	117 (46.8)
		any other	42 (16.8)
4.	Duration of medical practice	5 years	84 (33.6)
		6-10 years	92 (36.8)
		11-15 years	33 (13.2)
		16-20 years	12 (4.8)
		> 20 years	29 (11.6)
5.	Level of healthcare delivery	Primary	44 (17.6)
		Secondary	81 (32.4)
		Tertiary	125 (50)

S.no	Knowledge of asthma		N (%)
1.	The incidence and prevalence of asthma in the last 30 years have	Remained same	36 (14.4)
		Increased	187 (74.8)
		Decreased	27 (10.8)
2.	Among these which of the following are the risk factors for developing asthma: (can tick more than one)	Genetics	131 (52.4)
		Smoking	90 (36)
		Diet	29 (11.6)
		Air pollution	141 (56.4)
		Birth weight	32 (12.8)
		Occupation	33 (13.2)
		Urbanization	24 (9.6)
3.	The following inflammatory cells are involved in the pathogenesis of asthma (can tick more than one)	Neutrophils	8 (3.2)
		Eosinophils	128 (51.2)
		Mast cells	138 (55.2)

Table 2

S. No	Attitude and practice		
1.	Have you ever seen a spirometer?	Yes	238 (95.2)
		No	12 (4.8)
2.	Do you have any training in the use of a spirometer?	Yes	193 (77.2)
		No	57 (22.8)
3.	Have you ever used spirometry in making a diagnosis of Bronchial Asthma?	Yes	163 (65.2)
		No	87 (34.8)
4.	How did it help you?	Reversibility	160 (64)
		Variability	90 (36)
5.	Have you ever seen a peak flow meter?	Yes	189 (75.6)
		No	61 (24.4)
6.	Did you receive any training in the use of a Peak Flow meter?	Yes	149 (59.6)
		No	101 (40.4)
7.	Has it ever assisted you in making a diagnosis of asthma?	Yes	148 (59.2)
		No	102 (40.8)

8.	How did it help you?	Reversibility	80 (32.0)
		Variability	170 (68)
9.	Do you know about peak flow diary?	Yes	163 (65.2)
		No	87 (34.8)
10.	Do your patients keep peak flow diary?	Yes	75 (30.0)
		No	96 (38.4)
		May be	79 (31.6)
11.	What are the possible reasons why they don't?	The patients have not been told about it	112 (44.8)
		They do not have personal peak flow meters	81 (32.4)
		The doctor does not know how to use it	48 (19.2)
		The doctor feels it is not important	21 (8.4)
12.	Do you know about GINA guidelines for asthma control	Yes	167 (66.8)
		No	40 (16.0)
		Not in particular	43 (17.2)
13.	Do you apply GINA guidelines for asthma control	Yes	68 (27.2)
		No	182 (72.8)
14.	Do you routinely enquire about the following during each clinic visit?	Night time awakening	101 (40.4)
		Daytime	48 (19.2)
		Limitation	24 (9.6)
		Exacerbation	36 (14.4)
		Compliance with medication	77 (30.8)
15.	Do you frequently review your patients' inhaler technique?	Yes	183 (73.2)
		No	67 (26.8)
16.	If yes, how frequently?	Regularly	146 (58.4)
		Only after an exacerbation	54 (21.6)
		When patient make request	50 (20.0)
17.	Do you know about Adult Asthma Control	Yes	163 (65.2)

	Test?	No	87 (34.8)
18.	Do you know about Asthma Action Plan?	Yes	151 (60.4)
		No	99 (39.6)
19.	Do you regularly and routinely review the action plan with your patients?	Yes	151 (60.4)
		No	99 (39.6)
20.	Do you prescribe steroids for your asthma patients?	Yes	147 (58.8)
		No	103 (41.2)
21.	If yes, which route of administration do you routinely use? (can tick more than one)	Intravenous	8 (3.2)
		Oral	32 (12.8)
		Inhaled	210 (84)
22.	If no, the reason (s)	Steroids are not known to be effective	30 (12.0)
		Steroids have many and serious side effects	56 (22.4)
		The patients have phobia for steroids	20 (8.0)

Discussion

In the present study, knowledge, attitude and practices of doctors in Jammu and Kashmir regarding asthma were assessed. In addition, assessment of the extent to which they abide by the GINA Guidelines was also made. Majority of the respondents were Consultants with average practice of about 6-10 years. Asthma prevalence to be on the increase was reported by about three-quarters of the respondents. Quite a large number of respondents were knowledgeable of the various traditional risk factors for asthma. A lot of respondents had seen a spirometer as well as peak flow metre but knowledge regarding their use in asthma diagnosis was poor. Due to lifestyle changes and urbanization in countries like India, Asthma prevalence has increased worldwide in the last 30 years and it is expected to steadily rise, especially in developing countries. According to this survey, there is an exponential rise in the asthma cases since last few years. In a systematic review by Adeloje *et al.* asthma prevalence in Africa showed an increasing trend.³

An overwhelming majority of the respondents knew about the traditional risk factors of asthma, with main focus on factors such as atopy, genetics, occupation, and urbanization. However, their knowledge of the newly recognized risk factors of asthma such as diet, vitamins, and low birth weight was not as impressive. In addition to current pharmacological strategies, emphasis on dietary factors should prove beneficial.⁴ Consumption of rich sources of antioxidants should prove to be an effective new approach to asthma management since they significantly reduce oxidant stress.⁴ A positive relationship between oxidative stress, bronchial inflammation, development of asthmatic symptoms, and reduction of cellular functions has been suggested according to various studies.⁵

Reduction of oxidant stress and prevention of asthmatic symptoms can be a result of dietary interventions.⁵ Studies have shown that low birth weight infants may have increased risk of developing asthma symptoms in childhood and adolescence.⁶ The responses showed that the participants were quite knowledgeable of the well-established roles of eosinophils and mast cells in the pathogenesis of asthma. The same could not be said of the perceived role of neutrophils which was acknowledged by only one-fifth of the respondents. Although a large proportion of the respondents had seen spirometers and peak flow meters, only few (23.9% and 35.0%, respectively) apply them in making diagnosis of asthma. These findings are in accordance with the findings of the study by Desalu *et al.* which revealed that only 38% and 29.4% of the tertiary hospitals had peak flow meters and spirometers, respectively.⁷ Worse still, only 6% of the doctors reported that their asthmatic patients keep a peak flow diary. Lack of personal peak flow meters, in addition to failure of doctors to inform the patients about peak flow diary were perceived to be the main reasons of not maintaining peak flow diaries by the patients. However, in addition to typical symptoms of Asthma, diagnosis also requires the evidence of variable expiratory airflow limitation such as low forced expiratory volume in 1 s FEV1/forced vital capacity at some point in the diagnostic process, FEV1 increases by more than 12% or 200 ml from baseline after inhaling a bronchodilator, Peak expiratory flow (PEF) diurnal variation more than 10% and FEV1 increases by more than 12%, or 200 ml from baseline after 4 weeks of anti-inflammatory treatment.⁸ Also, the GINA guidelines recommend that the diagnosis of bronchial asthma should be made before commencement of controller treatment⁸. We found that as high as four-fifth of the respondents know about GINA guidelines but only two-fifth of them affirmed that they apply GINA guidelines in the care of their asthma patients. With the main aim of enhancing the awareness about asthma among health professionals, public health authorities, and the community and to improve prevention and management through a coordinated worldwide effort. It prepares scientific reports on asthma, encourages dissemination and implementation of recommendations, and promotes international collaboration on asthma research GINA was established.⁸ About 73.5% of the respondents said they regularly review patient's inhaler use technique. The observation that one quarter of asthma patients do not receive a regular review of their inhaler use technique should be considered worrisome bearing in mind the GINA finding that up to 80% of the patients do not use their inhalers correctly, and this contributes to poor symptom control and frequent exacerbations.⁸ The GINA guidelines recommend that practitioners should choose the most appropriate devices for patients putting into consideration patient's skills, comorbidities and cost; check inhaler technique at every opportunity and correct poor techniques using physical demonstrations.⁸ We observed that only a minority (28.2%) of the respondents make use of adult ACT in the care of their patients. This is worrisome because the ACT has been recommended by GINA for use by health-care providers and patients to improve asthma management.⁶ It is a patient-based tool for identifying patients with poorly-controlled asthma who may therefore benefit from early intervention. The ACT has been developed for asthma patients aged ≥ 12 years and is found to compare well with asthma specialists' global assessment of asthma control.⁹ It provides greater predictive values in determining asthma control.¹⁰ A very low proportion of respondents reported that they regularly review asthma action plan with their patients. All asthma patients should be provided with a

written asthma action plan appropriate for their level of asthma control and health literacy so that they know how to recognize and respond to worsening asthma as per GINA guidelines. The action plan includes the patient's usual medications, when and how to increase medications and start oral corticosteroids, and how to access medical care if symptoms fail to respond.⁸ majority of the respondents prescribe inhaled corticosteroids (ICS) as initial route of administration for asthma patients requiring maintenance steroid therapy. Nearly, all the other doctors would prescribe oral steroids initially. GINA recommends use of ICS initially for maintenance of asthma patients and oral steroids for those who remain uncontrolled or who are having exacerbations.⁷

Conclusion

The results of this study concluded that doctors in Jammu and Kashmir have fair knowledge of rising trend in asthma prevalence and the established risk factors of the disease. However, more efforts should be made to highlight the importance of GINA guidelines. The practices of the majority of the doctors regarding asthma diagnosis and management fell short of the recommendations by GINA guidelines. This suggests that the care an average asthma patient receives is not upto the mark. Therefore, there is an urgent need to improve asthma management practices among doctors practicing in Jammu and Kashmir. In the light of constraints in health-care delivery faced by resource-limited settings, national guidelines for asthma management which can incorporate GINA guidelines or adapt it based on prevailing socioeconomic, infrastructural, and clinical challenges should be framed. Beyond this, efforts should be made to regularly update health-care providers on asthma care through various avenues such as CME programmes. Furthermore, periodic clinical audit of care given to asthma patients will help a developing country like India to achieve a level of service delivery in asthma care that is at par with international best practices.

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