

Knowledge, Practice, and Adherence of Alexandria Chest Physicians to the Global Initiative for Asthma (GINA) Guidelines

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ABSTRACT

Background: Despite the development and dissemination of guidelines for the diagnosis and management of asthma, a gap remains between current recommendations and actual practice. **Objectives:** To assess the physicians' knowledge, practice and adherence to The Global Initiative for Asthma (GINA) guidelines before and after dissemination of guidelines and to identify causes of non adherence to these guidelines. **Materials and Methods:** A pretest-posttest design was used to evaluate GINA guidelines dissemination intervention. The study included all chest physician categories working in all chest hospitals in Alexandria. Total sample size included sixty chest physicians. An interview questionnaire was designed to collect data related to knowledge and practices of physicians in diagnosis and management of bronchial asthma and to their agreement with GINA guidelines and barriers to implementation of the guidelines. In addition, seven different case scenarios were used to assess the ability of the respondents to classify control and management of asthma. **Results:** Poor practice (70%) was more marked than poor knowledge (45%) before guidelines dissemination. After guidelines dissemination, poor practice was still high (41.7%) while poor knowledge fell to zero. Written asthma plan was used poorly by the studied physicians before as well as after guideline dissemination (3.3% and 16.7%, respectively). The reasons for non adherence of chest physicians to asthma guidelines were namely; lack of agreement with specific guidelines (26%); external barriers including lack of time, equipment or clinical space, educational materials staff support and reimbursement for services (25.6%) and poor patients' adherence to asthma guidelines (16.4%). **Conclusion and Recommendations:** Even though, Alexandria chest physicians, had improvement in their level of knowledge after GINA guidelines dissemination yet, their practice and adherence to asthma guidelines was still low. To overcome barriers of physicians' non adherence, educational programs and strategies are needed to ensure actual dissemination and implementation of the guidelines.

Keywords: Adherence, asthma guidelines, chest physicians, knowledge, practice

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INTRODUCTION

Asthma is estimated to affect 300 million people worldwide, with an expected increase to 400 million worldwide by 2025.⁽¹⁾ Asthma is associated with significant morbidity, much of which is preventable. Indeed, the number of annual worldwide deaths from asthma has recently been estimated to be 250,000.⁽²⁾ Global Initiative for Asthma (GINA) data indicate that asthma case fatality rates are more than 10 per 100,000 in several developing countries, and are more than 5 per 100,000 in some developed countries.⁽³⁾

A large number of good practice guidelines on asthma and many other diseases has been published over the past 15 years.⁽⁴⁾ Healthcare providers' adherence to asthma guidelines is critical to translating evidence based recommendations into improved outcome. Unfortunately providers' adherence to the guidelines remains low.⁽⁵⁾ There is some evidence that the use of guidelines may be especially beneficial for

more severe and /or difficult asthma.⁽⁶⁾ There is also some evidence that health care workers are not following evidence based guidelines for asthma management for both pharmacological and non pharmacological interventions.⁽⁶⁾ Several studies regarding the level of adherence to asthma guidelines concluded that the level of adherence to asthma guidelines is poor.^(4,7,8)

Little is known about the process and factors responsible for non compliance of physicians with the current guidelines. In order to develop strategies to enhance physicians' adherence, the underlying barriers must be identified first.⁽⁹⁾ A review of studies on improving physicians' adherence to guidelines found that the tools for improvement may not be generalizable, since barriers in one setting may not present in another.⁽¹⁰⁾

Appropriate knowledge and attitude are necessary but not sufficient for adherence. A physician may encounter barriers that limit his/her ability to perform the recommended

behavior due to patient, guideline, or environmental factors.⁽⁷⁾ There is a consensus that physicians must clearly understand guidelines in order to properly apply them.⁽¹¹⁾ Also, it is expected that pulmonologist and allergy specialists are more likely to provide better care, complying with the asthma guidelines, than generalists.⁽¹²⁾ Until the time of conduction of this study, there were no available data regarding the adherence of physicians in chest hospitals in Alexandria to guidelines for management of asthma, so this study was conducted with the following objectives: To assess knowledge, practice and level of adherence of chest physicians to GINA guidelines before and after dissemination of these guidelines. Also, the study aimed to identify barriers to their adherence to these guidelines.

MATERIALS AND METHODS

Study settings:

The study was conducted in chest hospitals and clinics in Alexandria governorate. These hospitals and clinics are

affiliated to the Ministry of Health. They include two chest hospitals: the largest one is Al-Maamora Chest Hospital, and its capacity is 550 beds (30 beds in Cardiology unit, 30 beds in Surgery unit, 120 beds for tuberculosis cases and 370 beds for chest patients). In this hospital, there is no outpatient clinic. The second hospital is Kom Al-Shokafa Hospital, and its capacity is 80 beds (40 beds for tuberculosis cases and 40 beds for chest cases). There is an outpatient clinic in this hospital. There are seven chest clinics in Alexandria: Maamora, Bacos, Moharam Bek, Karmoz, Gomrok, Mina El-Basal and Amreya. These clinics provide outpatient services. In all these settings, there is lack of both printed and soft copy of GINA guidelines.

Study design:

Pretest-posttest design was used to evaluate the guidelines dissemination intervention.

Study population:

The study population consisted of all chest physicians working in the study

settings. All chest physicians' categories were included in the study: assistant specialists, specialists, consultants and resident doctors with at least one year experience in asthma management. Those who were not available during the period of data collection, those who did not accept to participate in the study and those who did not complete the two sets of the study were excluded.

Sampling design and sample size

The total number of chest physicians working in the study settings was 82 physicians. Among them, 22 physicians did not complete the two sets of the questionnaire and were excluded from the sample. The full study participants totaled 60 physicians.

Data collection techniques and tools

The data were collected using an interview questionnaire that was designed by the researchers after literature review.^(13,14) The questionnaire was designed and developed in English. It included 47 items, and was

divided into four parts:

Part 1: This part included personal characteristics of the respondents including: the name (optional), sex, age (years), years of experience in chest specialty, practice profile (outpatient, inpatient, or both), specialty career (assistant specialists, specialists, consultants and resident doctors) and the mean number of patients per week.

Part 2: This part included the knowledge of doctors about asthma, and their usual practice when managing asthma patients. Twelve questions to assess knowledge; 16 questions to assess practice of managing bronchial asthma and 3 questions to assess the level of practice in relation to physician ability to diagnose correctly.

Part 3: This part included seven different case scenarios to assess the ability of the respondents to classify the control and management of asthma. Respondents were instructed to answer according to their usual clinical practice. Answers were considered

correct if they complied with the latest GINA guidelines published in 2009.

The answers that followed the guideline recommendations, took the score (1), and the answers that did not follow the guideline recommendations took the score (0). If there was more than one answer for a question and one of the answers was wrong, the answer was considered wrong and took the score (0). If there were more than one answer and the respondent chose one and other answers were left blank, it was considered correct and took the score (1). This was applicable for part two and part three only.

Physicians' knowledge/practice was categorized as follows: poor (<60% of total score); moderate (60-75% of the total score) and good (>75% of the total score).

Part 4: This part included questions related to the physicians' agreement with guidelines and their views for barriers for implementation of the guidelines.

The study period was from November 2010 to December 2010. After the chest

physicians had completed the first round of questionnaire, a printed GINA at-a-Glance Asthma Management Reference (revised 2009) was distributed along with a soft copy of GINA guidelines (PDF form) (updated 2009).⁽²⁾ After 2 weeks, the second round of the questionnaire was performed.

Pilot study

Before starting the field work, a pilot study was carried out for the questionnaire and included 2 physicians from each setting. After the pilot study, the questionnaire was reviewed and the needed modifications were done. The results of the pilot were included in the study.

Statistical analysis

The data entry and analysis was done by using the statistical package for social Science (SPSS) version 13. The data was analyzed using tests of significance Chi-square test and t-test at level of significance 0.05

Calculation of percent change is done by the following formula:

Post guidelines dissemination % – Pre guidelines dissemination %

Ethical considerations:

Anonymity and confidentiality of participants were ensured throughout the study. The purpose of the study was explained and an oral consent from the participants was taken before participating in the study.

RESULTS

Table 1 shows the distribution of chest Physicians according to socio-demographic and work characteristics. One third of physicians (33.3%) were females. More than one third of physicians (36.7%) were in the age group 25-35 years and another one third (33.3%) were in the age group 36-45 years. The job category for 41.7%, 25%, 20% and 13.3% of physicians were specialists, resident doctors, assistant specialists and consultants respectively. Nearly half of physicians (46.7%) had experience for more than 15 years. More than half of physicians (55%) had their practice in both outpatient and inpatient clinics

while 30% of them had their practice in outpatient clinics and 15% had their practice in inpatient clinics only.

Table 2 reveals the distribution of chest physicians according to the level of knowledge and practice concerning asthma diagnosis before and after dissemination of GINA guidelines. Before dissemination of the guidelines, less than half of physicians (45%) had poor knowledge while 11.7% had good knowledge. After guidelines dissemination, 6.7% had moderate knowledge and 93.3% had good knowledge. This difference is statistically significant ($p=0.004$). Regarding the level of practice, before GINA guidelines dissemination, 70% of physicians had poor level of practice and 30% had moderate level. After GINA guidelines dissemination, 41.7% still had poor practice, while 48.3% had moderate practice and only 10% had good practice. The difference is statistically insignificant ($p=0.35$). As regards level of physicians' practice related to asthma diagnosis, before guidelines dissemination

over sixty percent of physicians (61.7%) had poor diagnosis skills, 38.3% had moderate diagnosis pattern while no one (0%) had good diagnosis pattern. After guideline dissemination, still 61.7% had poor diagnosis skills, 25% had moderate diagnosis skills and 13.3% had good diagnosis skills. This difference is statistically insignificant ($p=0.48$).

Table 3 shows distribution of chest

physicians according to job category and the mean percent total score of all questions related to knowledge and practice before and after GINA guidelines dissemination. For all job categories the mean percent scores has improved significantly after GINA guidelines dissemination ($p=0.000$ was for assistant specialists and specialists and $p=0.001$ was for consultants and resident doctors).

Table 1. Distribution of chest physicians according to socio-demographic and work characteristics

Characteristics	No. (n= 60)	%
Job category		
Consultant	8	13.3
Specialists	25	41.7
Assistant specialist	12	20.0
Resident doctors	15	25.0
Gender		
Male	40	66.7
Female	20	33.3
Age groups (years)		
25-	22	36.7
36-	20	33.3
46-	12	20.0
55+	6	10.0
General experience (year)		
>1-5	12	20.0
6-10	9	15.0
11-15	11	18.3
> 15	28	46.7
Type of practice		
Outpatient	18	30.0
Inpatient	9	15.0
Both	33	55.0

Table 2. Distribution of chest physicians according to the level of knowledge, practice and degree of practice concerning asthma diagnosis before and after guidelines dissemination

Level of physicians' knowledge and practice*	Knowledge						Practice						Level of practice concerning asthma diagnosis					
	Before guidelines dissemination			After guidelines dissemination			Before guidelines dissemination			After guidelines dissemination			Before guidelines dissemination			After guidelines dissemination		
	No.	%		No.	%		No.	%		No.	%		No.	%		No.	%	
Poor	27	45.0	0	0.0	42	70.0	25	41.7	37	61.7	37	61.7	37	61.7	37	61.7	37	61.7
Moderate	26	43.3	4	6.7	18	30.0	29	48.3	23	38.3	15	25.0	15	25.0	15	25.0	15	25.0
Good	7	11.7	56	93.3	0	0.0	6	10.0	0	0.0	8	13.3	8	13.3	8	13.3	8	13.3
Total	60	100	60	100	60	100.0	60	100.0	60	100.0	60	100.0	60	100.0	60	100.0	60	100.0
P-value based on Chi-square test.	0.004						0.35						0.48					

* Poor is less than 60% of score, moderate is 60-75% of score and good is more than 75% score.

Table 3. Distribution of chest physicians according to job category and mean percent score of all questions related to knowledge; practice before and after guidelines dissemination

Job category	Before guidelines dissemination (Mean % score)	After guidelines dissemination (Mean % score)	p-value
Assistant specialist (n=12)	61.0	76.3	0.000*
Specialist (n=25)	60.2	72.5	0.000*
Consultant (n=8)	62.5	77.0	0.001*
Resident doctor(n=15)	60.3	73.3	0.001*

* Chi Square test was significant at $p < 0.05$

Table 4 illustrates the chest physicians' response to selected guideline items before and after GINA guidelines dissemination. Bronchial asthma was considered as a preventable disease by 50% and 85% before and after guidelines dissemination respectively ($p=0.000$). Before GINA guidelines dissemination, only 15% of physicians gave correct answers regarding the aim of bronchial asthma control but after guidelines dissemination, it has risen to 85% ($p=0.000$). Concerning environmental control, it was answered correctly by 20% and 100% before and after guidelines dissemination respectively with statistically significant difference ($p=0.000$). Concerning, immunotherapy, 93.3% and 100% mentioned the correct answer before and after guideline dissemination respectively but with statistically insignificant difference ($p=0.795$). There was no change in the percent of physicians (38.3%) who replied with correct answers regarding availability of Peak Flow Meter (PFM), and how to use it before and after dissemination of guidelines statistically insignificant difference ($p=1.0$). There was statistically significant difference concerning usage of medications recommended by guidelines and usage of written instructions (asthma plan) before and after guidelines dissemination ($p=0.016$ and 0.008 respectively).

Table 4. Chest physicians' correct response to selected guideline items before and after guidelines dissemination

Guideline Items	Before guidelines dissemination (n= 60)		After guidelines dissemination (n= 60)		% change	p-value
	No	%	No	%		
Preventability of bronchial asthma	30	50.0	51	85.0	35.0	0.000*
Aim of asthma control	15	25.0	51	85.0	70.0	0.000*
Environmental control	12	20.0	60	100.0	80.0	0.000*
Immunotherapy	56	93.3	60	100.0	6.7	0.795
Availability and usage of PFM	23	38.3	23	38.3	0.0	1.0
Usage of medications recommended in guidelines	18	30.0	32	53.3	23.3	0.016
Usage of written instructions (asthma plan)	2	3.3	10	16.7	13.3	0.008*

PFM, Peak Flow Meter

* Chi-square test was significant at $p < 0.05$

Table 5 shows the distribution of chest physicians according to job category and their correct responses on the seven case scenarios related to classification of asthma control and level and its treatment before and after dissemination of guidelines. The physicians' correct responses showed slight improvement regarding classification of asthma control after guidelines dissemination. However, there was statistically insignificant difference between pre- and posttest ($p = 0.269, 0.106, 0.197$ and 0.041 respectively)

for assistant specialists, specialists, consultants and resident doctors respectively. Concerning treatment of asthma patients in the seven case scenarios, physicians recorded higher mean percent scores of correct responses on posttest compared to pretest. This improvement was significant for specialists, ($p = 0.001$) but insignificant for assistant specialists, consultants and resident doctors ($p = 0.269, 0.777, 0.104$ and 0.191 respectively).

Table 5. Distribution of chest physicians according to job category and their correct responses in classifying the level of asthma control and treatment of asthma patients in the seven case scenarios before and after dissemination of guidelines

Job category	classifying the level of asthma control				treatment of asthma's patients			
	Before dissemination of guidelines (mean % score)	After dissemination of guidelines (mean % score)	P-value	Test of significance T test	Before dissemination of guidelines (mean % score)	After dissemination of guidelines (mean % score)	p-value	Test of significance
Assistant specialist (n=12)	80.9	86.9	0.269	-1.164	63.0	64.2	0.777	63.0
Specialist (n=25)	80.0	85.7	0.106	-1.680	54.0	69.7	0.001**	54.0
Consultant (n=8)	80.3	85.7	0.197	-1.426	58.9	66.0	0.104	58.9
Resident doctor (n=15)	80.9	84.7	0.041	-2.256	60.9	65.7	0.191	60.9

**t-test is significant at $p < 0.05$

Table 6 reveals the distribution of chest physicians' according to job category and their overall correct response to the seven case scenarios in relation to the GINA guidelines before and after guidelines' dissemination. For all job categories, there was improvement after guidelines dissemination. For the assistant specialists

consultants, and resident doctors, the improvement was not statistically significant ($p=0.518$, 0.083 and 0.115 respectively), While for the specialists, it was statistically significant ($p=0.003$). Regarding the overall agreement with guidelines, 65% of physicians agreed with guidelines.

Table 6. Distribution of chest physicians according to job category and their overall correct response on the seven case scenarios in relation to the GINA guidelines before and after guidelines dissemination

Job category	Before dissemination of guidelines (mean % score)	After dissemination of guidelines (mean % score)	p-value
Assistant specialist (n=12)	69.0	71.8	0.518
Specialist (n=25)	62.6	75.0	0.003**
Consultant(n=8)	66.1	72.6	0.083
Resident doctor(n=15)	67.6	72.1	0.115

**t-test is significant at $p < 0.05$

Table 7 shows the opinions of chest physicians as regards barriers to adherence to asthma guidelines. The majority of physicians (95%) stated that the treatment should be tailored according to the status of each patient and this represents 26% of the total responses, 93.3% expressed that the poor socioeconomic standard of the patient was the likely barrier (25.6% of the total responses). Sixty percent stated that poor patient compliance to the guidelines is an important barrier (16.4% of the total responses), while 40% stated that the guidelines themselves were too long, difficult to read and that there were contradictory or many guidelines about the same topic (11% of the total responses). More than one third (36.7%) stated that his/her usual practice is good and he/she does not want the changes and guidelines will not add more (10% of the total responses), 23.3% stated that guidelines were not applicable in practice (6.4% of the total responses) and lastly 16.7% stated that they are not workable i.e. results are not good (4.6% of the total responses).

Table 7. Opinion of chest physicians as regards the barriers of adherence to asthma guidelines

Barriers	Responses		% of physicians
	No.	%	
It is not applicable in practice	14	6.4	23.3
Treatment should be tailored according to the status of each patient	57	26.0	95.0
It's not workable (results are not good)	10	4.6	16.7
My usual practice is good and I do not want to the changes and guidelines will not add more	22	10.0	36.7
Poor socioeconomic standard of the patient	56	25.6	93.3
Poor patient compliance to the guidelines	36	16.4	60.0
The guidelines themselves are too long, difficult to read, presence of contradictory or many guidelines about the same topic	24	11.0	40.0
Total responses*	219	100.0	

*Multiple responses were recorded

DISCUSSION

Several studies were carried out to explore the relation between physicians' knowledge, practice, and attitude and adherence to asthma guidelines. A study done in Spain concluded that about 75% of health care professionals were familiar with guidelines. However, 36% admitted that they followed guidelines seldom or never and the level of adherence to guidelines was poor (30.3%).⁽⁴⁾ Another study concluded that level of knowledge among general practitioners and specialists regarding the use of tools to control asthma was not optimal.⁽¹⁵⁾ It was also concluded that asthma control levels are currently unsatisfactory in real life.⁽¹⁵⁾ A third study in Hong Kong concluded that suboptimal management by physicians was a likely cause of significant asthma morbidity worldwide.⁽¹⁴⁾

Physicians' knowledge, beliefs, and behaviors are crucial factors in management of asthma when it comes to prescribing the best possible treatment, carrying out appropriate follow-up, and ensuring adherence to treatment.^(2,15) The present study was carried out in chest hospitals and clinics in Alexandria governorate to assess the current situation as regards knowledge and

practice of chest physicians related to the GINA guidelines, and their adherence to the recommendations of these guidelines before and after the dissemination of these guidelines. Also, the study aimed to identify the causes of non adherence to these guidelines.

In the current study, Knowledge assessment of the studied physicians revealed statistically significant improvement after guidelines dissemination which indicates that dissemination of guidelines had a positive effect on the physicians' knowledge. This reflects the importance of continuous medical education programs in supplying physicians with up to date knowledge.^(9,16)

Practice assessment of the studied physicians revealed that moderate to good physicians' practices related to GINA guidelines has improved from 30% to 58.3 %, however this difference wasn't statistically significant. This indicates little effect of dissemination of guidelines on the physicians practice.⁽⁴⁾ Pearson mentioned that what

sounds good in theory may not be workable at the practical level. The relationship between theory and practice is never simple. Publishing a guideline document is not a guarantee that it will ever be read and still less that it will ever be acted on.⁽¹⁷⁾

Similarly physicians' skills regarding asthma diagnosis has shown non-significant improvement after guidelines dissemination ($p = 0.48$), indicating that dissemination of guidelines has a little effect on the physicians' practice as regards asthma diagnosis.^(18, 19)

Before guidelines dissemination, poor practice (70%) of the studied physicians was more marked than poor knowledge (45%), while after GINA guidelines dissemination, poor practice was still high (41.7%) and poor knowledge fell to zero. These findings coincide with the results of an Egyptian study,⁽¹³⁾ which found that poor practice is more marked than poor knowledge in the studied physicians. Also a study conducted by Cloutier (2002)⁽¹⁹⁾ stressed on the impact of educational interventions on physicians caring

for patients with asthma.

Before guidelines dissemination, 93.3% answered correctly that immunotherapy is a new modality of asthma treatment which is prescribed in selected patients. This became 100% after guidelines' dissemination. The slight statistically non-significant improvement in physicians' correct response to this item indicates that immunotherapy is a high cost treatment and it is an obstacle for physicians to prescribe new treatment modalities. Regarding availability of PFM and how to use it, 38.3% replied correctly before as well as after guidelines dissemination. This was in agreement with an Egyptian study,⁽¹³⁾ which found that 29.6% of physicians used PFM regularly and another study found that a minority of physicians used a PFM as a part of regular care of their patients.⁽¹⁴⁾ A Hong Kong study, concluded that PFM and spirometry are underutilized by Hong Kong' physicians, while a Korean study⁽⁷⁾ found that the use of office PFM was performed routinely by only 20% of the studied physicians. Our data and that of

others indicate that these simple diagnostic tools are not used by a large percentage of chest physicians.

Although significant improvement in use of asthma plan has followed guidelines dissemination, yet acceptable levels weren't achieved where the majority of physicians didn't adopt this practice (83.3%). According to several studies, the availability of a written action plan was associated with better asthma control.^(21,22) A Korean study,⁽⁷⁾ found only 5.2% of the physicians used written asthma plan, while an Egyptian study⁽¹³⁾ found that written asthma plan was given by 58.2% of physicians to the patients.

In the current study, the median number of correct responses did not differ between different careers. Meanwhile, the guidelines dissemination had little effects on the ability of chest physicians to correctly classify the level of asthma control which also indicates poor effects on the practice pattern of the physicians due to inertia of the previous practice. This data coincide with the data

driven from Hong Kong study⁽¹⁴⁾ as similar results were obtained.

Out of the sixty physicians who participated in the present study, 39 physicians (65%) were in agreement with the guidelines and only 21 physicians (35%) disagreed with the guidelines which means that one third of chest physicians do not agree with guidelines' recommendations and are not following them. A review of studies on improving physicians' adherence to guidelines had found that the tools for improvement may not be generalizable, since barriers in one setting may not be present in another.⁽¹⁰⁾ A theoretical approach of knowledge, attitude and behavior framework can help explain these barriers and possibly help target interventions to specific barrier.⁽¹⁰⁾ A further classification of the barriers into theoretical and practical had been published.⁽²³⁾ In the process of adoption, the internal barriers first have an effect on the cognitive components of knowledge, and then on the affective components of attitudes. A physician may

encounter barriers that limit his/her ability to perform the recommended behavior due to patient, guideline, or environmental factors. These are called external barriers and include: lack of time, equipment or clinical space, educational materials, support staff, and reimbursement for services.⁽⁷⁾

The present study sheds light on the reasons for the wide non adoption of evidence based asthma guidelines and their recommendations by chest physicians in Alexandria. This was explored using seven different questions that inquire about barriers to adherence to asthma guidelines and focus on barriers that could be changed by interventions targeted to improve physicians' adherence. A barrier was defined as any factor that limits or restricts complete physicians' adherence to the guidelines.⁽⁷⁾

The barriers to adherence to asthma guidelines as mentioned by the chest physicians in a descending order of frequency were namely; the treatment should be tailored according to the status of each patient (26%)

that signified lack of agreement with specific guideline; poor socioeconomic standard of the patient (25.6%) and poor patients compliance to the guidelines (16.4%) that refer to external barriers related to the patients.⁽⁷⁾ Concerning external barriers related to the guidelines themselves; they were rated by physicians (11%) as: too long, difficult to read, and with much contradiction and repetition. The misbelieve that; "The usual practice of physicians was good and they did not want the changes and guidelines will not add more" constituted 10% of the total responses and signified lack of motivation, inertia of previous practice and lack of self efficacy. Also, physicians who agreed with the statement; "They are not applicable in practice" constituted 6.4% of the total responses. The latter finding signifies lack of agreement with guidelines in general and was found to be correlated with questions about agreement with guidelines. Those who agreed that guidelines are not workable (results are not good) constituted 4.6% of the total responses

reflecting the lack of outcome expectancy. From the results of the current study, more than half of the respondents stressed lack of agreement with specific guidelines and poor socioeconomic status as the most important barriers to adherence of chest physicians to asthma guidelines. A study done in Spain⁽⁴⁾ found that the main barriers to physicians' adherence were related to the fact that physicians who are unfamiliar with guidelines, are unconvinced of their utility and are not being users of Spirometry. Another study, found that lack of agreement with guidelines, lack of self efficacy, lack of outcome expectancy, and external barriers were the most important barriers in their study.⁽⁵⁾

It is now recognizable that adherence is a complex, multi-dimensional, dynamic phenomenon that is influenced by many factors related to patients, disease, and therapy. Identifying such factors that contribute to non adherence to guideline recommendations constitutes the basis for planning individualized therapeutic

programs.⁽²³⁾

In spite of the existence of asthma guidelines for nearly 2 decades, there still remains a pressing need for educational programs directed towards physicians.⁽²⁴⁾

Implementation of clinical practice guidelines by clinicians can be influenced in many ways. These include education, financial incentives, management strategies (such as collection and feedback of comparative data to clinicians, and cueing via computerized medical records), performance expectations or benchmarks, and alteration of structural aspects of the clinical environment (convenient availability of specialists, including non physician personnel).⁽²⁵⁾ The implementation strategies have to be planned to suit local requirements and would obviously depend on the available resources. Two types of educational strategies had been described: dissemination strategies; designed to influence awareness, knowledge, and attitudes toward guidelines and their

recommendations; and implementation strategies; designed to improve adherence to recommendations, turning changes in knowledge and attitudes to changes in practices. Attitudes and skills require interaction and opportunities to practice skills.⁽²⁵⁾ The traditional continuing medical education formats of lectures are good for increasing awareness, but have limited effectiveness in affecting practice.⁽²⁵⁾ Electronic dissemination and print media also provide knowledge and increase awareness, but do little to affect attitudes, skills, and practice. Workshops offer opportunities for interaction and multiple teaching and learning strategies, but require more resources and clinicians' time than does information dissemination. Internet-based interactive curricula, interactive videos, and other electronic technologies are increasingly becoming available with the revolution in telecommunications and can be used for facilitating skill building.⁽²⁵⁾

There is little doubt that efforts to improve

the implementation of evidence-based guidelines by clinicians will increase the quality of patient care. The educational programs should be designed with clear objectives and be tailored to the local needs. The strategy, teaching techniques, and content must be appropriate for the objectives of the program and the audience. The focus should be on skill building and not merely information dissemination.⁽²⁵⁾

Before practice guideline can affect patient outcomes, it first affects physician knowledge, then attitude, and finally behavior. Although guidelines are necessary, their efficiency in affecting actual clinical practice is now questionable. The debate centers on what might be the best way to translate evidence into routine clinical practice, or specifically how to improve the application or implementation of the recommendations.⁽⁴⁾

CONCLUSION AND RECOMMENDATIONS

GINA guidelines dissemination was found to improve significantly physician's knowledge related to asthma control and management

but failed to accomplish this with their practices. This reflects the importance of continuous medical education programs in supplying physicians with up to date knowledge and skills. Low rates of physicians using the Peak Flow Meter and a written asthma plan even after GINA guideline dissemination emphasizes the need for training and offering this simple diagnostic tool to the everyday's physician' practice. Written asthma plan was poorly used by the studied physicians, 3.3% and 16.7% before and after guidelines dissemination respectively, indicating that the patients had no plan to assess their condition and when and where to consult the physician. This will add burden on the limited available resources. The reasons for non adherence of chest physicians to asthma guidelines was highlighted in the study, of which, lack of agreement with specific guidelines (26%), external barriers including lack of time, equipment or clinical space, education materials, support staff, reimbursement for services (25.6%), and

poor patients' adherence to asthma guidelines (16.4%).

Training of health care professionals on the management and control of asthma is very important. Opportunities for primary prevention should be promoted and facilitated by encouraging the use of inhaled corticosteroids, the office use of PFM and the use of written asthma plan. Formulation of guidelines for national plans for asthma control which also cover aspects related to implementation and evaluation is needed. Adaption of the international guidelines for asthma management to suit regional needs and circumstances is also needed. All physicians dealing with asthma management regardless of their specialties must share in the process of adaptation of the guidelines to the local needs.

Periodic check and review of the written asthma plan given to the patients to update it with the latest recommendations is required.

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