Does Guideline Knowledge Affect Treatment Compliance Among Emergency Doctors?

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Abstract: *Background:* The insufficient adoption of internationally accepted clinical guidelines may lead to less than adequate patient care of patients with asthma. *Objective:* To evaluate the knowledge and treatment compliance with Global Initiative of Asthma (GINA, 2011) asthma treatment guidelines among emergency physicians (EPs) at a referral hospital in northern Malaysia. *Methods:* A cross-sectional study was designed in the territory-level referral hospital in northern Malaysia. Twenty-seven EPs were asked to complete an asthma guideline questionnaire to assess their knowledge regarding GINA 2011 asthma treatment guidelines. A total of 810 patients were enrolled, and 30 patients were selected per physician. The authors evaluated the physicians' compliance with GINA 2011 asthma treatment guidelines. *Results:* Of 27 EPs, 20 (74.1%) had adequate knowledge of GINA 2011 asthma treatment guidelines. A total of 615 (75.9%) patients received guideline-recommended emergency treatment. Shortness of breath (n = 436, 53.8%) was the most frequently reported chief complaint. Furthermore, there was a significant but weak association between knowledge of the guideline and treatment compliance among emergency doctors (P = 0.003, φ = 0.110). Moreover, there was no significant change in therapy for patients with comorbid conditions. The mean age of respondents was 27.3 years. *Conclusions:* Overall, a fair level of guideline knowledge and treatment compliance was noted among EPs. Doctors with adequate guideline knowledge were more likely to comply with GINA 2011 asthma treatment guidelines.

Key Indexing Terms: Asthma guideline; Emergency physicians knowledge; Treatment compliance. **[Am J Med Sci 2014;348(5):357–361.]**

Asthma is a serious global health problem, affecting people of all age groups. When uncontrolled, asthma can place severe restrictions on daily life and is sometimes fatal.[1] The aim of asthma therapy is to achieve and maintain clinical control. Timely pharmacological intervention has shown to improve asthma control.[2,3] Various healthcare organizations have introduced clinical practice guidelines (CPGs) as a means of improving and standardizing treatment of important diseases such as asthma. Such guidelines are systematically developed statements, designed by experts, which assist doctors and patients in making decisions about appropriate healthcare for specific clinical circumstances.[4] The main aim of the CPG is to improve patient care and reduce morbidity and mortality. Efforts are being made to implement CPGs in daily practice for situations in which studies have shown inadequate care.[5]

Translating guideline recommendations into clinical practice is a complex process and involves multiple factors.[6] Changing clinical practice includes proper education of providers regarding the CPG and evaluation of its usefulness in enhancing outcomes and monitoring feedback.[7] Despite CPGs being available for more than 2 decades, existing literature suggests that there is still a wide variation among clinicians in the application of guidelines to clinical care.[8–10]

Asthma has a significant morbidity and socioeconomic impact and affects 1.5 to 1.8 million people in Malaysia.[11] The management of asthma during an acute attack is critical, requiring appropriate and timely intervention. A clear understanding of and knowledge about the pathophysiology and treatment of asthma cannot be overemphasized. Lack of knowledge about asthma management and treatment and the inability to assess the severity of disease have been noted among healthcare professionals at different levels.[12] Although researchers in the past have indicated the importance of adherence to asthma guidelines,[13] there is little evidence that indicates the success of adherence to asthma guidelines in the emergency department (ED).[14,15] There is no study conducted in Malaysia that evaluates the knowledge of emergency physicians and assesses treatment compliance with asthma guidelines.

METHODOLOGY

The study design was a prospective record viewing cross-sectional survey conducted at the Hospital Pulau Penang (Figure 1).

Assessment of Doctor's Knowledge of Guidelines

The authors developed and validated a questionnaire, which is used as a tool herein to evaluate their physicians' knowledge of the GINA 2011 guidelines. The questionnaire was divided into 2 sections; section 1 consisted of doctor's sociodemographic and basic professional information. Section 2 had 20 multiple-choice questions (MCQs) to assess doctors' knowledge. The survey included MCQs that were derived from the GINA 2011 guidelines. These MCQs were based on a conventional format, that is, the main question body, the correct answer and incorrect but plausible answers or distractors.

The content validation of the questionnaire was performed by a panel of experts who were asked to examine the content of the preliminary questionnaire for relevance. Consent was obtained, and questionnaires were distributed to the 27 doctors involved in the treatment of acute asthmatics in the ED at the study site. An internal scoring system was then used to categorize the doctors into those having "adequate knowledge" and "inadequate knowledge" on the basis of their response.[16] Participants were asked to complete the questionnaire immediately after caring for their patients.

Assessment for Doctor's Compliance With Guideline

The mechanism for determining the compliance with guidelines requires an analysis of doctors' prescribing habits.
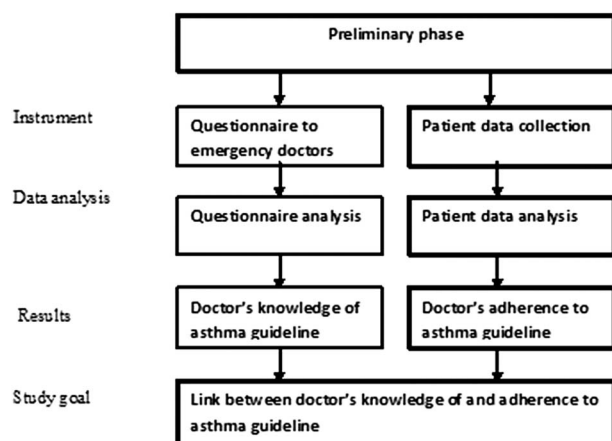
FIGURE 1. Flow chart for the present study.

The study was aimed to prospectively record the prescription habits of all 27 physicians who were given the the GINA 2011 guidelines questionnaire. Thirty patients were selected, per doctor participating in the study, for a total sample of 810 asthmatic patients (27 × 30 = 810). Pregnant patients were excluded from the study.

A data collection instrument was used to record the patients' demographic and clinical data. A thorough review of the patient data was performed to record conducted-to-note oxygen saturation, pulse per minute and respiratory rate per minute to categorize the patients' asthma severity based on the GINA 2011 guideline. Once the patients were categorized, the extent of the doctors' treatment relative to the patient's disease severity and indicated/contraindicated medications was noted to determine compliance with the GINA 2011 guidelines.

Data Analyses

Data were analyzed using the statistical package for social sciences (version 20.0; SPSS Inc, Chicago, IL). Categorical data were reported numerically as number and percentage of the total, whereas continuous data were reported using mean and standard deviation values. The χ^2 and Fisher's exact tests were used to detect the significance between categorical variables. A P value of ≤0.05 was considered statistically significant. To detect the strength and direction of significant association, the φ coefficient was used. The φ values from 0.00 to <0.10, 0.11 to <0.20 and 0.21 to <0.40 were translated as negligible, weak and moderate association, respectively.[17] A negative φ value was considered as an indicative for negative association between variables.[18]

Ethical Approval

The study was approved by the Ministry of Health and Medical Research Ethics Committee Malaysia (NMRR-12-1266-14166).

RESULTS

Doctor's Knowledge of Guideline

Of the 27 emergency doctors, 20 (74.1%) doctors had adequate guideline knowledge. The maximum and minimum correct answers, in accordance with the GINA 2011 guidelines were provided by 1 physician each, that is, 19 and 14, respectively. Male respondents (84.6%) demonstrated greater knowledge than female respondents (64%). Physicians with <3 years of experience had a statistically significant association with adequate guideline knowledge. More physicians who graduated from Malaysian medical schools had adequate knowledge of the guidelines (Table 1).

Patient Demographic and Clinical Data

More than half of the patients (57%) were male, and around 50% of the patients (n = 397) were aged 46 years and above. The sample was ethnically diverse and consisted of 439 Malaysian (54.2%), 177 Chinese (21.9%) and 194 Indians (23.9%). Thirty-five (4.3%) patients reported asthma attacks due to temperature changes. Hypertension, diabetes and chronic obstructive pulmonary disease were the 3 main comorbidities that were recorded. Chronic obstructive pulmonary disease was found to be the most common comorbidity (n = 130, 16%) followed by diabetes (n = 129, 15.9%) and hypertension (n = 85, 10.5%). Shortness of breath (53.8%) was the most common chief complaint among patients with an acute asthma attack. Two hundred fifteen (26.5%) patients had persistent cough (Table 2).

Clinical Practice Guideline Adherence

Three hundred forty-five (42.5%) male patients and 255 (31.4%) female patients received treatment from doctors having adequate guideline knowledge. The majority of patients with mild asthma (64.8%) and patients older than 46 years (36%) received treatment from doctors having adequate guideline knowledge (Table 3).

The majority of patients of both genders (male: n = 351, 75.4%; female: n = 264, 76.5%) received treatment that was compliant with the guideline recommendations. The majority of patients from different age groups received treatment in accordance with the guideline recommendation. Five hundred ninety-one mild asthma patients (85.1%), 22 (19.6%) moderate asthma patients and 2 (50%) severe asthma patients received guideline-recommended treatment. Statistically, there was a very significant association (P < 0.001) between asthma severity and adherence to treatment guideline. No other associations were observed between adherence to guideline by emergency physicians at our hospital and patient variables (Table 4).

Six hundred fifteen (75.9%) patients received treatment according to the GINA 2011 guidelines (Table 5). Guideline

TABLE 1. Association of doctor's demographics with guideline knowledge

	Adequate knowledge, n (%)	Inadequate knowledge, n (%)	P
Emergency doctors			
Overall	20 (74)	7 (26)	
Gender			
Male	11 (84.6)	2 (15.4)	0.38[a]
Female	9 (64.2)	5 (35.8)	
Work experience, yr			
<3	16 (88.8)	2 (11.2)	0.02[a]
3–5	4 (80)	5 (20)	
Graduation			
Malaysian	13 (92.8)	1 (7.2)	0.03[a]
Foreign	7 (53.8)	6 (46.2)	

[a] Fisher's exact test.