

Knowledge of Family Physicians about the Fundamental Diagnostic Modality for Chronic Obstructive Pulmonary Disease

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ABSTRACT

The adequate knowledge of primary health practitioners about spirometry being the best test for the diagnosis of chronic obstructive pulmonary disease (COPD) is essential because of high prevalence and sustained global rise in COPD population.

Methods: A cross-sectional survey of family physicians by a questionnaire (data interpretation) was conducted to assess the existing status of knowledge about the spirometric diagnosis for COPD. This was undertaken on the occasion of two scientific presentations as well as by directly approaching them at their clinics.

Results: A total of 150 questionnaires were given and 148 were returned with a response rate of 98.66%. Sixty three participants (42.56 %) selected the correct answer (spirometry: FEV₁, FVC and FEV₁/VC ratio) while 57.44% opted for the wrong answers for COPD diagnostic strategy given in the clinical scenario. More senior family physicians (P- value 0.076) and more educated physicians (P- value 0.022) had a better knowledge regarding the correct answer of performing spirometry.

Conclusion: There is inadequate knowledge among family physicians about the fundamental diagnostic modality (spirometry) of COPD.

Key words: Chronic obstructive pulmonary disease, COPD, family physicians, knowledge, spirometry.

INTRODUCTION

Globally, COPD is the fourth leading cause of morbidity and mortality and its burden is projected to increase in coming decades due to continued exposure to COPD risk factors and the aging of the world's population.¹ COPD is characterized by persistent airflow limitation that is usually progressive and associated with an enhanced chronic inflammatory response in the airways and the lung to noxious particles or gases.¹ Besides a good clinical history, physical examination, simple peak expiratory flow rate (PEFR) for screening, spirometry remains the gold standard test for diagnosing COPD and monitoring and its progression^{1,2}. The optimal knowledge of COPD diagnosis is important for the general practitioners

as most of the patients in the primary clinical practice first consult their family physicians. It has recently been evaluated that the general knowledge of family physicians as well as the senior medical trainees working in the hospitals is inadequate about the spirometric diagnosis of COPD and therefore the test is under utilized.³

METHODS

A cross-sectional survey of family physicians practicing in different parts of Pakistan including Lahore, Rawalpindi, Karachi and Peshawar was carried out. The survey instrument (data interpretation questionnaire) was designed to assess the existing status of family physicians knowledge about the fundamental diagnostic modality for

COPD. A well designed multiple choice questionnaire proforma was given to the family physicians to respond by picking the best answer out of the five multiple choice answers to a simple COPD scenario in the data interpretation. The questionnaire proforma was given to the family physicians who were gathered at two continuing medical education (CME) seminars on 'Pneumonia Updates' (Lahore) and 'Allergic Rhinitis and its Impact on Asthma' (Islamabad). Forty questionnaire proformas were filled by the family physicians at Lahore, directly at their clinics. The one page questionnaire consisted of a clinical data of a typical COPD patient; a short, simple format was maintained in the interest of reducing respondent burden and confidentiality of responses was assured. The respondent had to choose the best diagnostic modality among 5 given options for the COPD scenario including: a. Spirometry (FEV₁, FVC and FEV₁/VC ratio), b. Peak Expiratory Flow Rate (PEFR), c. Chest radiograph-PA view (CXR-PA), d. Sputum for ZN Staining (3 AFB smears) and e. Sputum culture & sensitivity (C/S). The questionnaires were collected back when they were filled spontaneously assuring minimal peer discussion. At the clinics, again it was requested to the participants to spontaneously fill and immediately return the questionnaire.

ANNEXURE: Study Questionnaire (Data Interpretation)

Please read the given case scenario and *select the most appropriate* answer at the end.

A 65 years old sanitary shop keeper and a life time cigarette smoker came to your clinic with long standing history of cough productive of mucoid sputum production. He admitted experiencing recent onset dyspnea, while walking to his home after closing his shop at night. His physical examination revealed normal vital signs, no clubbing or pallor and normal systemic examination except slight generalized reduction of breath sounds and diffuse wheezes on chest examination.

Choose (TICK) the best single investigation that can lead to his diagnosis.

- a. Spirometry (FEV₁, FVC and FEV₁/VC ratio)
- b. Peak Expiratory Flow Rate (PEFR)

- c. Chest Radiograph-PA view (CXR-PA)
- d. Sputum for ZN Staining (3 AFB smears)
- e. Sputum Culture & Sensitivity (C/S)

RESULTS

A total of 150 questionnaires were given and 148 were returned with a response rate of 98.66%. There were 120 males and 28 female respondents. All of the family physicians were at least MBBS qualified and a few (21 %) were post graduate diploma holders like MRCGP, DTCD and DMRD. Most of the family physicians (66%) were self employed, running their own clinics and 24 % of them were doing both government hospital job and private practice. A total of 63 participants (42.56 %) selected the correct answer 'a' at the end of the questionnaire (see annexure). Though the majority (42.56 %) selected the most appropriate response but if remaining wrong answers are gathered in combination, 57.44% selected other inappropriate options. All together, most physicians (57.44%) could not answer the correct stem (Spirometry: FEV₁, FVC and FEV₁/VC ratio) among the five options to be selected as the most important option for COPD diagnosis. Twenty one (14.8%) selected the second option of peak expiratory flow rate, forty two (28.37 %) selected the third option of CXR-PA, thirteen (8.78 %) selected the fourth option of performing sputum ZN staining and only 9 (6.08%) family physicians selected the last option of performing sputum culture and sensitivity.

Table 1. Number and percentages of physicians opting from 5 options in COPD scenario.

Stem	Answer options for COPD investigations	No. of Physicians (n=148)	Percentage (%)
A	Spirometry (FEV ₁ , FVC and FEV ₁ /VC ratio)	63	42.56
B	Peak Expiratory Flow Rate (PEFR)	21	14.18
C	Chest Radiograph-PA view (CXR-PA)	42	28.37
D	Sputum for ZN Staining (3 AFB smears)	13	8.78
E	Sputum Culture & Sensitivity (C/S)	9	6.08

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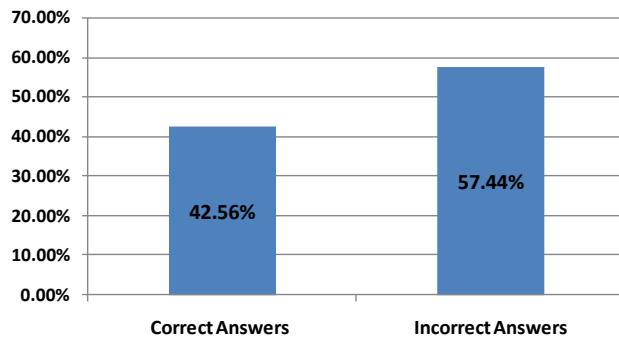


Fig. 1: Percentages of correct and incorrect answers for COPD scenario.

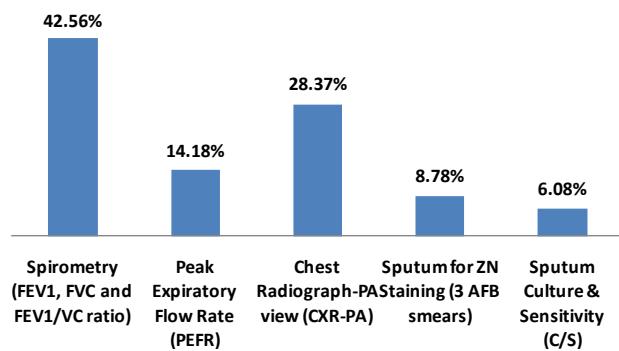


Fig. 2: Distribution of percentages of family physician's options for fundamental COPD diagnostic modality.

Regarding the distribution of age and the education status, it was seen that most of the physicians of <40 & those >48 year old were mainly qualified as MBBS & between 40-48 years age group was consisted of MBBS plus a PG diploma. The association of age with knowledge about COPD diagnosis revealed that the more senior family physicians had a better knowledge regarding the correct answer of performing spirometry (P- value 0.076). Chest radiograph was the second commonest answer (28.37 %) after the correct answer (42.56 %) and most of the junior physicians opted it to be the best option (P- value 0.065). However the association was insignificant for their knowledge about the other three stems. The association of education with knowledge about the correct answer for COPD diagnosis revealed that the more educated physicians possessing diplomas had a better knowledge (P- value 0.022) compared to those with MBBS alone.

DISCUSSION

COPD, like asthma is a chronic inflammatory disease of the airways.¹ The number of patients with COPD has grown dramatically and it now ranks as the third leading cause of death in the United States of America.⁴ In the developed world, cigarette smoking is the leading cause of this disease and in underdeveloped areas of the world, indoor burning of fossil fuels for cooking and heating is another considerable cause.^{1,4} The exact prevalence of COPD in Pakistan is unknown, however, it is suggested that the risk of undetected airflow limitation in smokers is associated with increasing age and pack per years of smoking.⁵

Spirometry detects the presence of COPD as well as its severity and is as important in the COPD population as sphygmomanometry in diagnosis and assessment of severity of hypertension.^{2, 6} Most of the patients in clinical practice consult their family physicians in the first place and the lack of spirometry utilization is a factor to over or under diagnose patients with COPD, with a potential to under and over treat this common and treatable condition.^{3, 5}

In this study, we assessed the fundamental knowledge of family physicians about the most appropriate diagnosing modality of COPD. It was evaluated that majority of family physicians were lacking the basic knowledge about spirometric diagnosis of COPD in clinical practice. Spirometer is now a days cheaper than some other medical instruments and can be used in the form of smaller hand held bed side or office instrument in the primary health services. Early diagnosis of COPD can slow further progression of the disease with pharmaceutical and non-pharmaceutical measures but this is considerable if high risk patients like symptomatic tobacco smokers undergo spirometry.^{5, 6}

The comparison of results of our study with other similar studies is also reflective of poor knowledge of doctors working at different levels leading to poor utilization of spirometry. In one study more than 80% of those with COPD diagnosed after spirometry had no previous diagnosis due to lack of spirometry awareness among family practitioners.⁷ In one of our recent

similar study where 52 internal medicine trainees were assessed for their basic knowledge about spirometry utility in COPD, it was seen that only 17.3% (9) could precisely define COPD presence according to the post bronchodilator spirometric FEV₁/FVC ratio < 70%, while 9.6% (5) could define COPD severity according to spirometric data and 19.2% (10) agreed spirometry as gold standard test for COPD diagnosis.³ Many other similar studies⁸ including a study from Nigeria among trainee doctors having 321 participants revealed only 108 (33.6%) reported having adequate knowledge of spirometry.⁹

In a recent cross-sectional survey at Hong Kong, the use of spirometry in the diagnosis and management of COPD was evaluated.¹⁰ This survey involved four clinic settings: hospital-based respiratory specialist clinic, hospital-based mixed medical specialist clinic, general outpatient clinic (primary care), and tuberculosis and chest clinic. Thirty physician-diagnosed COPD patients were randomly selected from each of the four clinic groups. All of them had a FEV₁/FVC <70 and had been followed up at the participating clinic for at least 6 months for COPD treatment. Of 126 patients who underwent spirometry, six (4.8%) did not have COPD. Of the 120 COPD patients, there were 111 males and mean post-bronchodilator FEV₁ was 46.2% predicted. Only 22 patients (18.3%) had spirometry done during diagnostic workup, and 64 patients (53.3%) had spirometry done ever, reflecting poor knowledge and utility of spirometry.

In another multicentre study, it was evaluated that there was comparatively little information on the management of COPD patients in primary care.¹¹ It was a web-based pilot survey conducted to evaluate the general practitioner's (GP) knowledge, understanding, and management of COPD in 12 territories across the Asia-Pacific region, Africa, eastern Europe, and Latin America, using a 10-minute questionnaire having 20 questions and translated into the native language of each participating territory. The questionnaire was administered to a total of 600 GPs (50 from each territory) involved in the management of COPD patients and all data were collated and analyzed by an independent health care research consultant. This survey demonstrated that the GPs' understanding of

COPD was variable across the territories, with large numbers of GPs having very limited knowledge of COPD and its management. A consistent finding across all territories was the underutilization of spirometry (median 26%; range 10%-48%) and reliance on chest x-rays (median 14%; range 5-22%) for COPD diagnosis, whereas overuse of blood tests (unspecified) was particularly high in Russia and South Africa. The findings of this survey suggest there is a need for more ongoing education and information, specifically directed towards GPs outside of Europe and North America, and that global COPD guidelines appear to have limited reach and application in most of the areas studied.¹¹

In our present study, the overall knowledge of COPD diagnosis among family physicians was 42.56 % (which is better than some of the other global studies) and the rest of the participants were relying on chest radiograph and other diagnostic modalities. The limitation of the study is that some of the family physicians may not have picked the clinical data and thus did not know about COPD diagnosis being questioned. If they were told about COPD as the present scenario, they may have picked the right answer.

RECOMMENDATION

Spirometry is the gold standard test for the diagnosis and assessment of severity of COPD but the level of awareness among family physicians is limited and therefore the modality is underutilized. There should be awareness seminars and COPD guidelines distribution among the family physicians and spirometry should be encouraged to be available at the primary care level due to rising burden of COPD across the world.

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