

# Low- and middle- income countries have a different illness profile

Dear Editor,

Tyagi *et al.*<sup>[1]</sup> assessed the diagnostic accuracy of screening tools for chronic obstructive pulmonary disease (COPD) in primary health care by conducting a literature search and constructing a rapid evidence synthesis in the June 2021 issue of the journal. The authors analyzed the accuracy of a screening questionnaire and tested the performance of a hand-held (expiratory) flow meter to correctly diagnose this irreversible airway disease by shifting through various available studies and drawing some pragmatic conclusions. As ideal and extensive facilities for diagnosing this medical illness may not be available everywhere at peripheral centers, such screening tools may come handy under demanding conditions so as not to leave any true case outside the ring while also cache includes only those cases who have a high probability of having the disease. Therefore, this approach makes the best utilization of available finite resources that are in short supply in remote locations.

Under the heading “Results,” the authors had a subheading “Study characteristics,” in which they described which types of studies for rapid evidence synthesis were included for this purpose. They wrote that most of the studies were conducted in developed countries such as the UK, the US, Australia, and European countries, except one that was conducted in Vietnam. The questionnaire used had several questions related to the smoking history of individuals. As smokers are likely to develop chronic inflammation of their airways, they are likely to have a cough with expectoration along with a characteristic dip in the expiratory flow in the first second of pressure- volume curve. Hence, they are likely to have a diagnosis of COPD.

Although this hypothesis is straightforward in developed and industrialized countries, ground realities are different in low- and middle- income countries (LMICs). Oh *et al.*<sup>[2]</sup> conducted a study to look into the characteristics of patients with stable COPD in pulmonology clinics in seven Asian cities. Under the heading, “Characteristics of subjects,” they drew a bar chart to show the percentage of individuals exposed to biomass fuel and dusty jobs in the continent. It is clear from looking into the figure that exposure to outdoor and indoor air pollution has a close link with COPD, in addition to smoking.

Meghji *et al.*<sup>[3]</sup> conducted their multicenter assessment last year and suggested ways to improve lung health in individuals

in low- and middle-income countries. They made various recommendations. Under the heading “COPD,” the authors wrote that although tobacco smoking remains an important risk factor for airway obstruction in LMICs, between a third to a fifth of cases in LMICs occur in people who have never smoked, and a substantial proportion of these cases are probably related to biomass use for cooking and heating, especially in women. Hence, what appears is that due to poor legal regulations, ambient air contains different particulate matters of various sizes, and residents in that atmosphere frequently inhale them, resulting in inflammation and airway obstruction.

Fresh AIR collaborators stated in their comment 2 years ago that polluted air having several noxious gases is responsible for the early origin of COPD in low- and middle-income countries and wonder what are the implications of a false start (of the unrelenting inflammation of cells lining the airway).<sup>[4]</sup> The World Health Organization runs a webpage on COPD, where it considers the western pacific region separately. It has a webpage related to Vietnam, where it states that the primary cause of COPD is exposure to tobacco smoke (either active smoking or second-hand smoke), which accounts for three of four cases. It further states, “Other risk factors include exposure to indoor and outdoor air pollution and occupational dust and fumes.”<sup>[5]</sup>

What we need to remember is that as the population of several underdeveloped regions gets exposed to polluted air, dust, gases, fumes, and toxic vapors, these may be the chief trigger for the development and progression of pulmonary disease in specific circumstances. Hence, we need to include this question in the questionnaire too. In lieu of that, we may miss several cases during survey leading to underdiagnosis of the illness, which may lead to an undercounting of the true impact of the disease. Then, the diagnosis may be missed or delayed. In addition, when the disease may be reversible in the early stage by avoiding further exposure, the opportunity may be missed. Hence, we should not only include these questions relevant to high-income countries in our checklist but also those specific to other geographies. Every attempt should be made to measure all risk factors for the illness for all and only then we will be able to make correct decisions.

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### Conflicts of interest

There are no conflicts of interest.

We accessed the webpage at the time of submission of this letter to the Editor.

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