

# The dangers of incense burning: COPD in Saudi Arabia

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## To the editor

We read with great interest the article titled “Chronic obstructive pulmonary disease: hospital and intensive care unit outcomes in the Kingdom of Saudi Arabia”<sup>1</sup> and we would like to make the following comments on its methodology:

1. The fact that 37% of this chronic obstructive pulmonary disease (COPD) population are never-smokers is a cause for concern as they may be asthmatic or cases of bronchiectasis. The so-called never-smoker COPD has been largely attributed to asthma.<sup>2</sup> It is true that regular and heavy exposure to biomass, in the absence of smoking, may induce COPD.<sup>3</sup> However, this is limited to poor countries in which biomass is used, on a regular basis, for daily cooking.<sup>3</sup> Interestingly, the authors attribute the COPD to incense burning and not using biomass for cooking.<sup>1</sup> The 1994 study they quote<sup>4</sup> as evidence for the presence of COPD attributed to incense burning in Saudi Arabia concluded that the culprit was biomass burning for cooking and not incense (as offered in the initial hypothesis of the study they quote).<sup>4</sup> The burning of incense (a relatively expensive commodity) is practiced in Saudi Arabia for ceremonial or brief social occasions, and has never been proven to induce COPD, let alone severe COPD sending the patient to the intensive care unit (ICU).
2. The authors have quite rightly stated that “the problem of the misdiagnosis of asthma and COPD is common.”<sup>1</sup> As previously stated, the never-smoker patients in their study may be asthmatic. The situation is compounded by the fact that the pulmonary function tests were unavailable in some patients. Further, COPD cannot be diagnosed solely on the basis of “compatible physical examination.”<sup>1</sup>
3. We believe that to ensure reliable findings, two things could have been done:
  - a. excluding from analysis all patients without spirometry (unless they are called back for testing after discharge); and
  - b. never-smoker cases should have been excluded or, alternatively, analyzed separately as a subgroup. It is possible that the unusually low rates of ICU mortality in the whole group was the product of inadvertently including never-smoker asthmatics or bronchiectasis cases with a more favorable outcome than COPD.

## Disclosure

The author reports no conflicts of interest in this work.

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# Author response

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We read with great pleasure the letter to the editor written by Professor Al-Kassimi and we thank him for his interest in our paper “Chronic obstructive pulmonary disease: hospital and intensive care unit outcomes in the Kingdom of Saudi Arabia.”<sup>1</sup>

Our response to the queries raised by the comments 1 and 3 are shown below; comment 2 was simply the reiteration of limitations noted by ourselves in the discussion section of our paper.

1. We agree with his concern that several forms of environmental smoke exposure may contribute towards COPD and this should have been better acknowledged in the discussion section of our paper. While we agree that smoking is one of the most studied COPD risk factors, the possibility of non-smokers developing this illness is not unheard of, as shown in epidemiological studies on this matter.<sup>2,3</sup> In our opinion, classifying non-smokers as asthmatics in our study may not be an accurate representation of our patients.
2. We acknowledge the concern raised by Professor Al Kassimi related to the mortality rates in our study being low secondary to inclusion of non-smokers who may not have had COPD to start with. Accordingly, in our study

**Table 1** The outcome of COPD patients admitted to the ICU

Factor	Results	
	Non-smokers	Smokers
ICU mortality	4 (5.6)	3 (6.3)
Hospital mortality	7 (9.9)	6 (12.5)
ICU stay	3 (1–29)	3 (1–40)
Hospital stay	9 (2–43)	8 (2–40)
Tracheotomy	7 (9.9)	4 (8.3)
Cardiopulmonary arrest	3 (4.2)	0
Acute renal failure	4 (5.6)	2 (4.2)
Home O <sup>2</sup> on discharge	29 (40.8)	28 (58.3)

**Notes:** Results are expressed as the mean  $\pm$  standard deviation; median (range) or number (percentage).

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we have analyzed the results of smokers and non-smokers separately, as shown in Table 1. It is important to note that there were no statistically significant differences observed between smokers and non-smokers with regards to ICU or overall mortality. Therefore, we may conclude that the inclusion of non-smokers is unlikely to be the reason for lower mortality rates seen in our study.

## Disclosure

The author reports no conflicts of interest in this work.

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