

# Factors influencing management of chronic respiratory diseases in general and chronic obstructive pulmonary disease in particular in Saudi Arabia: An overview

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**Abstract**

The prevalence of chronic obstructive pulmonary disease in Saudi Arabia is 4.2% among the general population and 14.2% among smokers. Studies showed that management of respiratory diseases is inadequate. In this article, we have elaborated on how factors as health economic factors, lack of health-care providers, culture, attitude, lifestyle (such as smoking and physical inactivity), and lack of adherence to the evidence-based practice guidelines may influence chronic respiratory disease management in Saudi Arabia. We have to conclude that these factors should be taken into account while seeking to improve and optimize the quality of care for patients with respiratory diseases in Saudi Arabia.

**Keywords:**

Chronic obstructive, Saudi Arabia, delivery of health care

According to the World Health Organization (WHO), chronic obstructive pulmonary disease (COPD) and asthma are among the most common respiratory diseases affecting people worldwide.<sup>[1]</sup> Respiratory diseases are associated with excess mortality, reduced quality of life for patients, and high health-care costs.<sup>[1,2]</sup> In 2014, respiratory diseases combined represented the fifth leading cause of death in Saudi Arabia, according to the Ministry of Health (MOH).<sup>[3]</sup> Approximately, 3388 people with respiratory diseases died in 2014, compared to 1892 in 2010.<sup>[3]</sup>

The WHO has estimated that >65 million people have moderate-to-severe COPD worldwide.<sup>[4]</sup> COPD is defined by the Global

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Initiative for Chronic Obstructive Lung Disease (GOLD) as:

A common preventable and treatable disease 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. Exacerbations and comorbidities contribute to the overall severity in individual patients.<sup>[5]</sup>

In 1990, COPD was the sixth leading cause of death globally. Currently, it is the third leading cause of death.<sup>[5,6]</sup> The burden of COPD is increasing in Middle Eastern countries and Saudi Arabia in particular.<sup>[3]</sup> Factors such as increasing smoking rates, climate, and wars (chemical weapons) may contribute to this increase.<sup>[6,7]</sup>

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Saudi Arabia has a population of approximately 30 million,<sup>[8]</sup> with many people suffering from COPD.<sup>[3,9,10]</sup> The few studies that have investigated the prevalence of COPD in Saudi Arabia have reported a comparable prevalence to other developed countries.<sup>[11-13]</sup> In the general Saudi adult population the reported prevalence ranges between 2.4% and 4.2%<sup>[10,13]</sup> and is expected to increase further due to the relatively high number of people in Saudi Arabia who smoke (27.9% of the Saudi population aged >40 years).<sup>[11]</sup> The population is also frequently exposed to nonsmoking factors, such as biomass fuel, dusts, gases, and outdoor air pollution.<sup>[6,9,13]</sup> In Saudi Arabia, many people also report a history of tuberculosis, chronic asthma, and respiratory-tract infections during childhood, which are considered risk factors for COPD.<sup>[5,6]</sup>

Saudi Arabia is a positive exception in the health-care system in the Middle Eastern region due to the government giving health services a high priority.<sup>[14]</sup> According to the WHO, Saudi Arabia is ranked 26 of 190 countries in terms of the quality of the health-care system (examples of other rankings include New Zealand: 41; Australia: 32; Canada: 30; Kuwait: 45; and Qatar: 44).<sup>[14]</sup> However, the total number of patients who visited emergency departments and chest diseases clinics in public hospitals, and the number of people who died due to respiratory diseases have increased noticeably over the past 4 years.<sup>[3]</sup> Whereas, this may be explained by increasing numbers of people with respiratory diseases,<sup>[15,16]</sup> this may also be influenced by factors such as health economics, low number of health-care providers, inadequate quality of care provided by health-care providers, religion, culture, and lifestyle.<sup>[14,15,17,18]</sup> In this article, we will elaborate on the influence that these factors may have on chronic respiratory disease management in Saudi Arabia.

### Health economics

Lack of funds is a serious challenge to Saudi Arabia because health services are free for the Saudi population.<sup>[1,6,7]</sup> In 2014, the Saudi Arabian government spent around 12% of the gross domestic product (GDP) on the health sector,<sup>[19]</sup> compared to 16% of GDP in the United States.<sup>[20]</sup> While higher spending does not by definition mean better quality of health care, it can be one factor leading to better health-care systems<sup>[14,21]</sup>. On the other hand, the MOH could become more targeted in allocating funds. For example, they could spend more on implementation of cost-effective patient interventions and evidence-based training programs for health-care providers to improve the quality of care.<sup>[14]</sup>

Previous studies have recommended that Saudi Arabia reform the model of health financing and consider health-care insurance for both foreign workers and citizens to decrease financial stress on

the government.<sup>[14,21]</sup> Privatization of public hospitals with control and subversion by the MOH may be another solution to the health economic factors.<sup>[14]</sup> These solutions may increase income to the MOH and help improve the health-care system and research activities in Saudi Arabia,<sup>[14,21]</sup> which may improve management of respiratory diseases as a result.

Every year, the Saudi health-care system experiences additional stress (on finances, health-care providers, and health services) during Hajj, which is the pilgrimage to Mecca city in Saudi Arabia.<sup>[14]</sup> This is a unique situation for Saudi Arabia because Mecca and Medina are the two holiest cities in the Islamic world. During Hajj (annually in the last month of the Islamic calendar), Saudi Arabia provides many free services to >2 million pilgrims from around the world, including free health care, which may influence the health economics issues in Saudi Arabia.<sup>[14]</sup> The Saudi government should ask the private health sectors to provide free services for pilgrimages during Hajj to decrease the health economics issues.

### Health-care providers

According to the MOH, the number of physicians and nurses per 10,000 people in Saudi Arabia are estimated to be 12.5 and 29.8, respectively.<sup>[3]</sup> These proportions are low compared to other countries such as Bahrain (30 and 58/10,000) and the United States (27 and 98/10,000).<sup>[14]</sup> Further, the total number of chest physicians working in all sectors of Saudi Arabia is around 600, which represents 0.73% of the total number of physicians (MOH sectors,  $n = 257$ ; other government sectors,  $n = 137$ ; private sectors,  $n = 206$ ).<sup>[3]</sup> Most European countries have a higher reported percentage of chest physicians. For example, Poland's percentage of chest physicians is 2.93% and Italy's is 6.61%.<sup>[22]</sup>

Currently, there are >23 Saudi universities providing medical, nursing, and applied health science degrees to students.<sup>[3]</sup> The government in Saudi Arabia could encourage more people to study medicine, nursing, and applied health science by providing incentives to them and opening extra schools of medicine and nursing locally, or by sending students to study medicine in other countries to increase the number of health-care providers.<sup>[3]</sup>

### Smoking

A very important factor that affects health care and managing respiratory diseases in the Saudi Arabia is smoking, the cause of many chronic diseases, such as COPD, heart disease, and lung cancer.<sup>[23]</sup> In Saudi Arabia, the prevalence of smoking (cigarettes and waterpipes) is estimated to be 20%, compared with 16.2% in Canada, 16.8% in the United States, 14.7% in

Australia, and 12.1% in Qatar.<sup>[7,24-27]</sup> Around 83% of Saudi smokers began smoking at the age of 15 years,<sup>[28]</sup> and the prevalence of smoking among Saudi adolescents is steadily increasing.<sup>[7]</sup> The prevalence of smoking among children aged between 11 and 19 in Saudi Arabia is 19.3% (24% male; 11.2% female).<sup>[29]</sup> These young smokers are likely to contribute to an alarming and serious national health problem in coming generation.<sup>[7,29]</sup>

The Saudi Arabian government has invested effort toward smoking cessation among Saudis during the past 4 years.<sup>[30,31]</sup> The tobacco control program was established by the MOH in Saudi Arabia to provide smoking cessation clinics and education programs for smokers, free of charge.<sup>[31]</sup> There are >70 smoking cessation clinics in Saudi Arabia and smoking is now banned in government sectors, universities, and public institutions.<sup>[31]</sup> In addition, the Saudi government has banned smoking advertisements in the Saudi media.<sup>[31]</sup> However, despite all these efforts, the percentage of smokers remains alarmingly high and is increasing among Saudis.<sup>[7,30]</sup>

The tobacco control program should probably not be a stand-alone program; there is an urgent need to provide further education programs about the negative impact of smoking among young people. Studies have proven that smoking prevention programs provided at schools have short- and long-term positive effects on smoking reduction among young students.<sup>[32,33]</sup> For example, a school-based smoking prevention program in Saudi Arabia resulted in a higher level of confidence to remain a nonsmoker in students.<sup>[32]</sup> It would therefore be beneficial to implement smoking prevention programs widely, and at all school levels in Saudi Arabia to prevent chronic diseases, such as COPD and decrease health-care costs. More work is needed to develop effective smoking cessation programs that will also take Saudi-specific barriers into account.<sup>[32,33]</sup>

### Language

Whereas, Arabic is the official language in Saudi Arabia, English is the official language for communication between health-care providers in hospitals. This is a convenient for the large number of health-care providers from non-Arabic-speaking countries hired by the government because of a lack of Saudi health-care providers.<sup>[18]</sup> However, as a result almost all health-care providers communicate in a language that is not their first language, which is likely to affect the quality of knowledge transfer.<sup>[18]</sup>

Communication between patients and health-care providers is also affected because only a small proportion of health-care providers speak the Arabic language fluently. This may lead to miscommunication and

decreased quality of care.<sup>[18,34]</sup> A possible solution could be the implementation of Arabic language requirements for non-Saudi health-care providers, and providing regular Arabic courses for non-Arabic health-care providers.<sup>[18]</sup>

### Religion, culture, and lifestyle

Islam has a long history in Saudi Arabia.<sup>[34]</sup> The religion should ideally contribute to the health and well-being of the people who adhere to it, as it encourages people to be healthy and strong.<sup>[35]</sup> However, in some communities, there are extreme religion believers who do not wish to obtain treatment from standard medical care systems and treat themselves with traditional herbal medicine.<sup>[35]</sup> This may lead to decreased health and an increased burden of disease in these communities.<sup>[35]</sup> Another belief may be that diseases such as chronic or life-threatening conditions are a test from God and represent a way to atone for sins. While Islam encourages people to be patient and seek good treatment based on recent medical recommendations, some people still stay home and wait for death.<sup>[35]</sup> Providing a logical communication with this type of people may be a possible solution to convince them to seek health management for their diseases.

Family support is very important for people in Middle Eastern Arabic countries, such as Saudi Arabia<sup>[35]</sup> and Islam encourages people to help and look after their family. Therefore, many elderly people prefer to stay at home, rather than at a hospital, which may negatively affect their health conditions.<sup>[35]</sup> As a result, family members play an important role in caring for elderly people.<sup>[35]</sup> A previous study suggested that increasing family members' knowledge and awareness of their loved one's chronic disease and providing the family members with essential care may help improve the quality of care and the health of patients with chronic diseases in general and respiratory diseases in particular.<sup>[36]</sup>

Many studies have now shown that physical inactivity is also associated with the epidemic of chronic diseases and respiratory diseases.<sup>[37,38]</sup> Patients with COPD tend to be physically inactive in daily life,<sup>[37,38]</sup> and a relationship exists between a decreased level of physical activity and poor quality of life, which may increase health-care use and reduce survival.<sup>[37]</sup> The level of physical inactivity in Saudi Arabia is high among both males and females.<sup>[39]</sup> Reasons for inactivity may include lack of exercise facilities and limited time.<sup>[39]</sup> According to the Centers for Disease Control and Prevention and American College of Sports Medicine, adults should accumulate 30 min or more of moderate-intensity physical activity on most days of the week.<sup>[39]</sup> More than 96% of Saudi males and 98% of Saudi females do not meet these recommended physical activity levels, compared to 64% of males and 60% of females in Australia.<sup>[39,40]</sup>

This low level of physical activity of patients with COPD in Saudi Arabia is likely to contribute further to the mortality and health-care burden associated with COPD in this country.<sup>[38]</sup> Currently, a great deal of research effort is being directed worldwide toward interventions that might increase physical activity in patients with COPD, but no clear recommendations can be provided yet. While there is no convincing evidence of the direct effect pulmonary rehabilitation on physical activity levels among COPD patients, implementing pulmonary rehabilitation is an important first step to improving exercise capacity and muscle strength in Saudi patients with COPD.<sup>[41]</sup> This can be supported by the fact that evidence proves that pulmonary rehabilitation reduces dyspnea, anxiety, depression, and hospital admission rates, and improves exercise capacity, level of physical activity, and quality of life, at least in the short-term.<sup>[41]</sup>

The culture in Saudi Arabia negatively affects women's access to health care.<sup>[35,42]</sup> Women are only given access to a government hospital when accompanied by a male guardian, women are not allowed to sign the consent form for medical procedures, and most males do not permit male physicians or other male health-care providers to treat the women for whom the men are responsible. Access to health care is also affected by women being prohibited to drive cars.<sup>[35,42]</sup> Women's access to hospitals could be improved by providing public transportation or arranging private transport that is fully paid by the government to female patients.

### Lack of awareness of evidence-based practice guidelines to manage respiratory diseases (particularly chronic obstructive pulmonary disease)

To date, several national and international clinical COPD management guidelines have been developed, including the Saudi Initiative for Chronic Airway Disease (SICAD) guidelines<sup>[2]</sup> and the frequently updated GOLD strategy document.<sup>[5]</sup> These guidelines were developed to provide standard management for patients with COPD, and COPD care should meet these evidence-based recommendations.<sup>[2,5]</sup>

It is evident that a good understanding of COPD guidelines by physicians is important for good patient care.<sup>[43,44]</sup> Many physicians and pulmonologists are, however, unaware of or have poor understanding of and adherence to the GOLD and SICAD recommendations for the management of COPD in many countries including Saudi Arabia.<sup>[43,45]</sup> This may be a result of, for example, time constraints or disagreement with the recommendations.<sup>[43,44]</sup> It is important to increase the physician's awareness of COPD guidelines to improve COPD management<sup>[44]</sup> and decrease morbidity and mortality rates.<sup>[5]</sup> Previous studies demonstrated

that providing an education program regarding evidence-based medicine guidelines to physicians and health-care providers improved their knowledge, skills, and performance in their practice and led to improved patient outcomes.<sup>[46,47]</sup>

The Saudi Continuing Medical Education (CME) activities aim to optimize health-care providers' knowledge and clinical skills after completion of medical professional degrees.<sup>[48-50]</sup> However, the CME do not address COPD guideline recommendations very well. For example, there were only four short (half-day) CME activities available regarding COPD management in the Eastern Province from January 2012 to October 2016 (2012, *n* = 2; 2013, *n* = 1; 2014, *n* = 1) and most respiratory CME activities were about asthma management.<sup>[49]</sup>

It is clear that the high prevalence of smoking in Saudi Arabia, the low number of chest physicians and poor compliance to the COPD guidelines increase the burden of respiratory diseases such as COPD.<sup>[2,14,43-45]</sup> Whereas, the factors above should be considered when seeking to improve and optimize health care, knowledge of patient opinions regarding optimizing care would also be very useful. Further studies exploring patient opinions would most likely be very helpful.

## Conclusion

Health economics, religion, culture, lifestyle, and lack of awareness of and adherence to the evidence-based practice guidelines are likely to affect management of respiratory diseases in Saudi Arabia. These factors should be considered when seeking to improve and optimize health care.

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### Conflicts of interest

There are no conflicts of interest.

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