

Thoracic Surgery: Opportunities and Challenges in Saudi Arabia

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ABSTRACT

The cardiothoracic surgery is an essential field of medical sciences in producing cardiothoracic surgeons with higher principles of knowledge, skills and integrity with a profound impact on health care system. Progress in achieving excellence in cardiothoracic surgery and its allied research goals varied over the time and across the countries. Saudi Arabia devoted special attention to fostering higher education on health care system although, the country is facing challenges in the management of cardiopulmonary diseases burden amenable to cardiothoracic surgical treatment. Patients have access to quality cardiothoracic surgical care, but still the state is struggling for enough number of trained thoracic surgeons to provide better health care services in cardiothoracic surgery field. This review article summarizes the opportunities and challenges in this promising surgical discipline.

Key words: Cardiothoracic surgery, opportunities, challenges.

Introduction

Saudi Arabia is the largest country of Arabian Peninsula, with an approximate population of 32.4 million people. The country is highly blessed with natural resources with high income advantages. In last three decades, Saudi Arabia has undergone a major economic transition and experience of significant urbanization.¹⁻² The proportion of individuals living in urban areas has doubled.³ The rapid urbanization has been associated with increase in respiratory health problems including cardiothoracic diseases.⁴ The arena of cardiothoracic and vascular surgery includes three major disciplines cardiac, general thoracic and vascular surgery. In the past these three fields were practiced by single individual and still in many parts of the world this practice is continued. Advancement in general thoracic surgery took place because of research. Clinical innovative procedures have been invented and implemented in past few decades. Thoracic surgery departments in Saudi Arabia took origin in similar fashion. In Saudi Arabia the number of thoracic surgeons

registered with Saudi Commission for Health Specialties are very limited in number. This article documents the need for the emergence of general cardiothoracic surgery in Saudi Arabia as a distinct surgical specialty and the challenges and the opportunities for such an evolution.

Scope of practice

In Saudi Arabia, the scope of thoracic surgery practice includes the diagnosis and management of benign and malignant diseases of the lung, esophagus, foregut, mediastinum, chest wall, pleura and pleural space. The incidence of Motor Vehicle Accidents (MVA) is about 4.7% resulted an increase incidence of chest trauma which are commonly managed by thoracic surgeons.⁵ Thoracic surgeons are experts in the management of diseases within their scope of practice. Thoracic surgeon determines the diagnosis and proceed with evaluation of pathology such as lung cancer and assess the patient for possible surgery or refer the patient to oncology services. The

thoracic surgeons participate in multidisciplinary care of oncology patient's pathology. In Saudi Arabia, some treatments or techniques, services of advance thoracic surgery are limited to health care centers with specialized expertise such as pulmonary transplantation or minimal invasive thoracic surgery.

Training and skills Required

In Saudi Arabia, the thoracic surgeons are limited in number and mainly confined to specialized and university hospital levels. They required to complete general surgery training before starting thoracic surgery fellowship; some graduates of cardiac, vascular surgery opt for specialization in the thoracic surgery and they need to complete extra training in thoracic surgery. Most of the thoracic surgery training composed of 3-4 years of training in general thoracic surgery including 3-6 months training in cardiac surgery, ICU, anaesthesia and selected elective rotations. They need to gain ample skills in physiology, pathology, pharmacology, respiratory & GI system and in the preoperative and perioperative and postoperative management care of thoracic patients. Thoracic surgeons are usually skilled in endoscopy and bronchoscopy with both flexible and rigid in bronchoscopy, laryngoscopy and upper gastrointestinal endoscopy.

Respiratory Disease Burden

The spectrum of pulmonary pathology in Saudi Arabia is due to diverse conditions commonly encountered in the region from the centuries-old illnesses of tuberculosis to Middle East Respiratory Syndrome.⁶ The contemporary problems such as lung complications from climate factors in the desert region, cultural habits due to water-pipe, shisha and cigarette smoking⁷. Saudi Arabia has a high prevalence of non-cancer lung pathology. The incidence of chronic respiratory illnesses such as COPD is (4.2%)⁸, asthma (4.05%)⁹ and other debilitating illnesses including TB. The social and economic impact of such a disease is

amplified by the fact that, unlike cancer, tuberculosis affects young people in the prime of their productive life. The incidence of lung cancer in Saudi Arabia is increasingly and the major risk factor is the various forms of smoking.¹⁰

Challenges, Opportunities and solutions

In the Kingdom of Saudi Arabia, there is an acute shortage of the existing certified thoracic surgeons and very few thoracic surgeons are registered with the Saudi Commission for Health Specialties. The ratio is one thoracic surgeon per 25000 people, the female thoracic surgeons are only few in number. Some of the hospitals depend on General surgeons with limited training in the thoracic surgery to cover the services of thoracic surgery. The number of thoracic surgeons available are not enough to provide adequate services in most of the hospitals all over the country. Therefore, emphasis needs to be placed on increasing the number of fully trained thoracic surgeons.

Another issue is the availability or lack of qualified thoracic anesthetist and respiratory therapist in the thoracic surgery field. Thoracic surgery involves the active participation of well-trained thoracic anesthetist, nursing staff, respiratory therapists, physical therapists and biomedical engineers. These allied medical staff members are lacking professional training. Increased compensation and inclusion of these individuals as valued members of the thoracic surgical team has a huge potential to increase their ability and productivity. The government has taken worthwhile measures to provide valuable care of thoracic associated medical illnesses.

Affordability

The overall health care system in Saudi Arabia is greatly advanced and well equipped. Electronic medical records have replaced the old fashioned paper records. Digital imaging,

though, "ISHAS" easily available with detailed clinical information of the patients. This is credited to the country's increased wealth and priority of the government to provide quality healthcare to the nation.¹¹ The provision of free health care has helped ensure fair access to the whole population. However, few healthcare professionals have expressed concern over the current approach to funding this system.¹² The current level of provision alone consumed 7.61% of the governmental budget in 2017.¹³ Yet with a rapidly growing population, change in the pattern of health and disease the demand is increased. The strategies to manage these issues need to be designed and available to divert a potential healthcare crisis in the future. The public health schemes provide business center models in the public hospitals with specific health care issues. This problem is less acute with patients in a higher social bracket. Even in this population, patients are cost-conscious. The daily costs of a hospital bed in Saudi Arabia is higher because quality health care facilities and government has taken worthwhile measures to provide quality health to the entire nation.

Training opportunities

A number of cardiothoracic (CT) residency positions remain unfilled because barriers to popularity of CT surgical training include the length of training, the absence of training paradigms that incorporate progressive operative responsibility, the extremely hierarchical nature of most practice positions with inequitable distribution of income generated by group practices, and the reduced remuneration per case secondary to proliferation of public health schemes. Specifically looking at training programs targeted at the development of general thoracic surgery positions, only few such training programs exist in the country. Residents are provided insufficient training for example, they have less access to operate benign thoracic conditions. Therefore, a significant opportunity exists to increase the

thoracic surgical workforce in the country. Increasingly, there has developed a perception that thoracic surgery is viable from a financial viewpoint for the hospital as well as the practitioner. In addition, the visibility and excitement around minimally invasive approaches such as video-assisted thoracic surgery (VATS) and robotic surgery has a greater chance of attracting young talent to the field. The existing cardiothoracic surgery departments would identify individuals interested in general thoracic surgery. Another limitation in training is the absence of continuing education requirements for licensing or for periodic board certifications. Combined with a general lack of access to the latest medical publications, this decreases the impetus of the practicing surgeon to familiarize himself with current treatment paradigms and pathways to improve care. The increasing availability of the internet and open access publishing should hopefully ameliorate this problem.

Research opportunities

Saudi Arabia is moving ahead to promote a high-quality education and research culture in the country. Research in medical sciences play a significant role in the country's economic growth, long-term sustainable development and in improving the quality of life. Saudi Arabia has 78 universities and degree awarding institutes, 12 scientific journals which are indexed in a Journal Citation Report, Institute of Scientific Information (ISI). Saudi Arabia produced 170,000 research papers.¹⁴ The current ranking of Saudi Arabia in global science is 43. However, in medicine, the total number of research papers published are 170000¹⁴, citable documents 148836, total citations 1449661, citations per documents 9.30 and h-index 271.¹⁵ However, in thoracic surgery the country produced less research 129 (0.075%) articles, the state needs to improve the quality research in medical sciences mainly in the thoracic surgery.

Conclusions

The overall health care system in Saudi Arabia is greatly advanced and well equipped. Electronic medical records have replaced the old fashioned paper records. Digital imaging, though, "ISHAS" easily available with detailed clinical information of the patients. The absence of a rapid response system limits the outcome of true surgical emergencies and thoracic trauma. The tumor boards with equivocal participation by all relevant specialists are very common inside as well as outside the academic environments. The amount of surgically treatable thoracic health conditions in Saudi Arabia is large, with less number of trained general thoracic surgeons. Therefore, this field needs highly academically trained thoracic surgeons with advanced technology to provide better health care services to the nation.

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