

# 2019

DISCUSSION PAPER

# The Physician Workforce in Saudi Arabia

## Challenges and Opportunities

General Directorate for National Health Economics and Policy  
Saudi Health Council, Kingdom of Saudi Arabia

المجلس الصحي السعودي  
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The sections of the report were written jointly by a team from the SHC and the WB, under the umbrella of an advisory group of physician stakeholders from KSA. Contributors from the stakeholder advisory group included: Lubna Alansary, Sami Alnassar, Nawfal Alje-rian, and Khalid Fouda. Contributors from the SHC included: Mohammed Alluhidan, Hus-sah Alghodaier, Ayman Hodhaini, Adwa

Alamri, Khalid Al-Moteiry, and Quds Alsafffer. Contributors from the WB included: Kate Tulenko, Mariam M. S. Hamza, and Christopher H. Herbst. His Excellency Nahar Alazemi, Secretary General of the Saudi Health Council, and Rekha Menon, Practice Manager at the World Bank, provided input and support throughout.

The aim of this discussion paper is to provide preliminary and unpolished results to encourage discussion and debate. The findings, interpretations, and conclusions expressed in this work are those of the authors, and do not necessarily reflect the views of the Saudi Health Council or the World Bank, their Boards of Directors, or the governments they represent. The World Bank and the Saudi Health Council do not guarantee the accuracy of the data included in this work. Citation and the use of material presented in this report should take into account this provisional character.





# BACKGROUND

The health system in the Kingdom of Saudi Arabia (KSA) will undergo profound changes over the next years. Physicians have a unique opportunity to transform not only how medicine is practiced and what Saudi medicine is known for, but also to transform the entire Saudi health system and its regional and global role. While this is an opportunity to position the Saudi health system as a leader in several fields identified as crucial to the success of medicine in the future, effective changes and reforms must be structural rather than just superficial. Resistance to change—ever present, but particularly strong in medicine because of the “do no harm” tenet—requires that physicians must be engaged in the planning and implementation of the transformation and must believe the changes to be in the best interests of their patients and their profession.

Drawing on information and data available in 2019, this paper summarizes the status of the medical profession in Saudi Arabia, highlighting some of its key challenges and opportunities. The paper identifies and presents various options for targeted interventions and policies related to the medical profession and is intended to be used as a resource for discussion and ideas on physician reform. The paper was not designed to be a rigorous analysis of the physician labor market in Saudi Arabia. Instead it was designed to elicit discussion and to serve as a background document for rigorous analytical work and planning efforts, including the development of health workforce policies and strategies for Saudi Arabia.

In order to develop a reference set for this paper, articles, presentations, and documents were gathered from the Saudi Health Council (SHC), the Ministry of Health (MOH), and the Saudi Commission for Health Specialties (SCFHS). In

addition, a literature search was conducted for articles and books on Saudi physicians and the practice of medicine in PubMed and WorldCat (Box 1). Over 100 references were found and reviewed; the most relevant articles are included in the reference list. Moreover, the paper was informed by the unique insider knowledge of a small advisory group of representative physician stakeholders from across the sectors in KSA. (see Appendix 3 for the full list). The paper was developed jointly under the auspices of this advisory group, which was invaluable in terms of input, feedback, and revision.

The remainder of the paper is organized as follows, highlighting the key challenges and opportunities in each section: Section 2 discusses the availability of physicians. Section 3 discusses the skill mix of physicians. Section 4 discusses the distribution of physicians, and Section 5 the performance of physicians (focusing on skills,

## BOX 1: THE LITERATURE SEARCH

A search was performed on PubMed for English articles with the keywords “physicians” or “doctors” and “Saudi Arabia” in the Title/Abstract. This yielded 733 articles. On imposing an additional criterion of articles published within the last five years (2014 onward), 326 articles were found. This formed the basic search criteria.

For references in this study, the base search was modified to include specific keywords in the Title/Abstract area — “quality of care” (4), “performance” (15), “motivation” (3), “job satisfaction” (3), “retention” (1), “recruitment” (3), “burnout” (3), “leadership” (5), and “competencies” (2). The total number of articles found (39) were listed. This list was then reviewed for duplicates and a list of 32 articles was obtained.

competencies, and motivation). Section 6 provides a short conclusion.

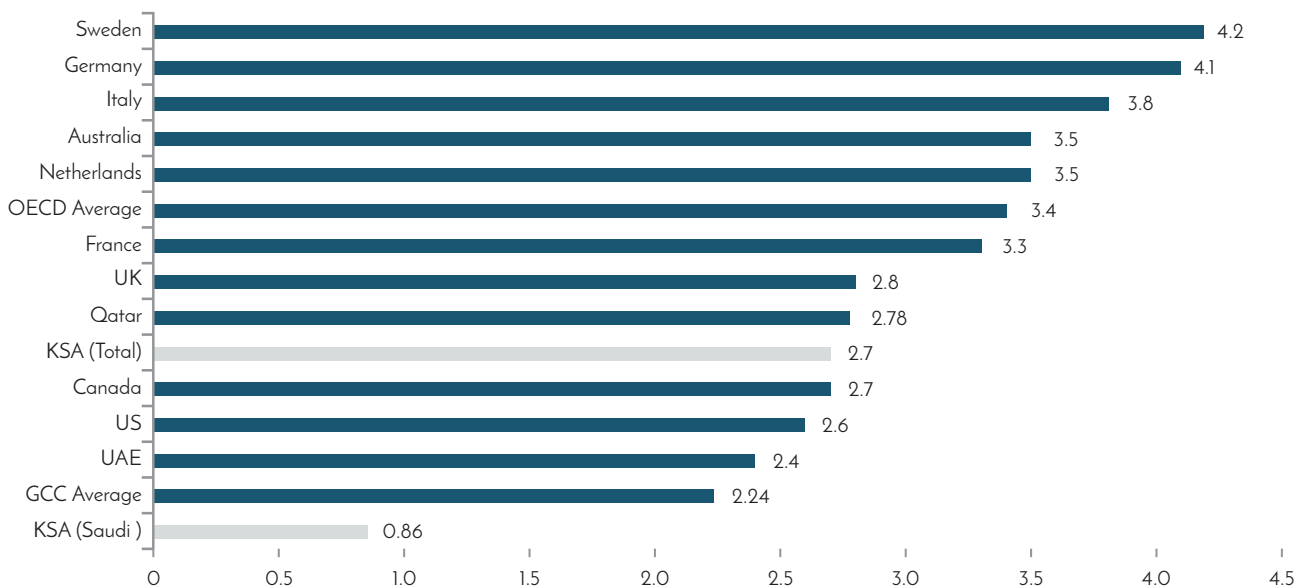
Throughout this paper, Saudi national physicians (Saudi citizens) are referred to as “Saudi physicians” and physicians of non-Saudi citizenship are referred to as “foreign physicians.” The status of Saudi physicians and the practice of medicine was analyzed through the lenses of both the Saudi health systems and trends in health systems around the world. Current and future challenges were identified and innovative opportunities for ways forward generated. While challenges are indicated, data limitations prevented an in-depth assessment. Instead, the paper pays particular attention to the opportunities to improve the availability, distribution, and performance of Saudi physicians in KSA.

# AVAILABILITY OF PHYSICIANS

# 2

The total number of physicians employed in the labor market in KSA, as a ratio of the population, seems to be on par with many Organisation for Economic Co-operation and Development (OECD) countries, but very low when taking into account Saudi physicians only (Figure 1). The total physician-to-population ratio in KSA is 2.7:1,000, which is close to the OECD average of 3.4:1,000. While the ratio of total physicians to the population is comparable, the ratio of Saudi physicians only to the population is 0.86:1000 (MOH 2018). This ratio is far lower than those found in other OECD countries. OECD physicians per 1,000 population vary widely, with a low of 2:1,000 in the Republic of Korea and a high in Greece of 6.3:1,000 (OECD 2017).

FIGURE 1 PHYSICIANS PER, 1000 POPULATION

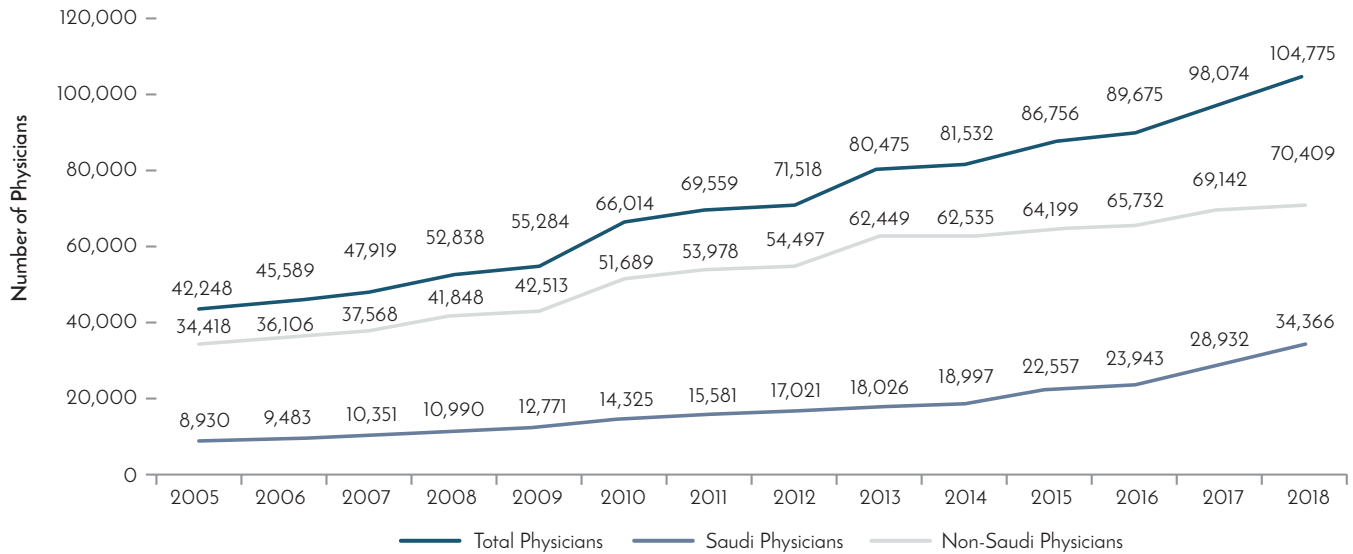


Sources: OECD (2017); World Bank (2016); MOH (2018).

Note: OECD data are for 2015 or most recent year; Gulf Cooperation Council (GCC) data are for 2016 or most recent year; KSA data are for 2018.

OECD Health at a Glance data are used for OECD countries; World Bank Indicators are used for GCC countries; MOH Annual Yearbook data used for KSA.

FIGURE 2 PHYSICIAN SAUDIZATION TREND, NUMBERS



Source: MOH (2018).

Note: Physicians include dentists. This includes physicians practicing in all sectors including MOH, other government sectors, and the private sector.

Despite the low ratios, KSA has experienced a period of significant growth in numbers of physicians (Figure 2). The total number of physicians in KSA more than doubled between 2005 and 2018. The number of foreign physicians increased substantially during that time-frame, from around 35,000 in 2005 to 70,000 in 2018. And the number of Saudi physicians grew even faster—it more than tripled, from around 9,000 in 2005 to 34,000 in 2018. With the focus on the Saudi nationalization scheme, or Nitaqat—the policy implemented by the Ministry of Labor and Social Development, which requires Saudi companies and enterprises to fill their workforce with Saudi nationals up to certain levels—there are pressures to increase the number of Saudi physicians further.

Demand to become a physician and enter medical school is generally high in Saudi Arabia, particularly in the public sector. Overall, interest in

becoming a physician is strong among Saudi youth. The profession is considered prestigious and well-paid, and public medical schools are ranked among the best in the region. Additionally, public medical schools are free to the population, with the government even providing a monthly incentive—in addition to covering all tuition fees for studies—for those who are accepted. The demand for private medical school education also exists but has been declining in recent years. Rather than a reflection of student interest, this decline reflects a decrease in the scholarships available to students (funded by the government or otherwise) attending private medical schools.

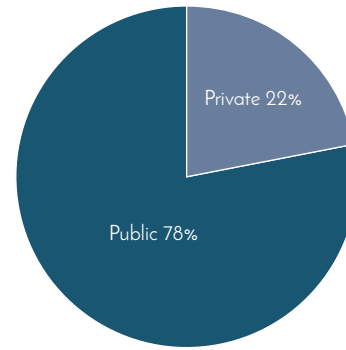
Demand to become a physician and enter medical school largely outstrips capacity to accommodate demand. Currently there are 37 medical schools in Saudi Arabia (see Appendix 2 for full list), of which 78 percent are public and 22 percent private (see Figure 3). Public sector schools

are more and more reducing enrollment because of capacity constraints: qualified applicants are increasingly turned away from Saudi medical schools and some students go abroad to Europe or North America to pursue medical education instead. Moreover, private sector schools no longer receive the government support they once had. During the past decades, efforts focused on increasing the number of private medical schools to scale up output. This expansion was stopped amid concerns about quality of education and weak regulatory enforcement over private sector institutions.

Today, the total number of Saudi medical graduates per 100,000 population is 9.7, which is lower than it could be. The number is slightly lower than that of comparator countries but higher than Japan, the United States (US), Korea, and New Zealand (see Figure 4). This is important to note because, while 25 percent of US physicians are foreign-born, foreign-born physicians are rare in Japan and Korea. This means that Japan and Korea are able to meet their needs for physicians by training fewer physicians per population than KSA.

FIGURE 3 PUBLIC VS. PRIVATE MEDICAL SCHOOLS IN KSA

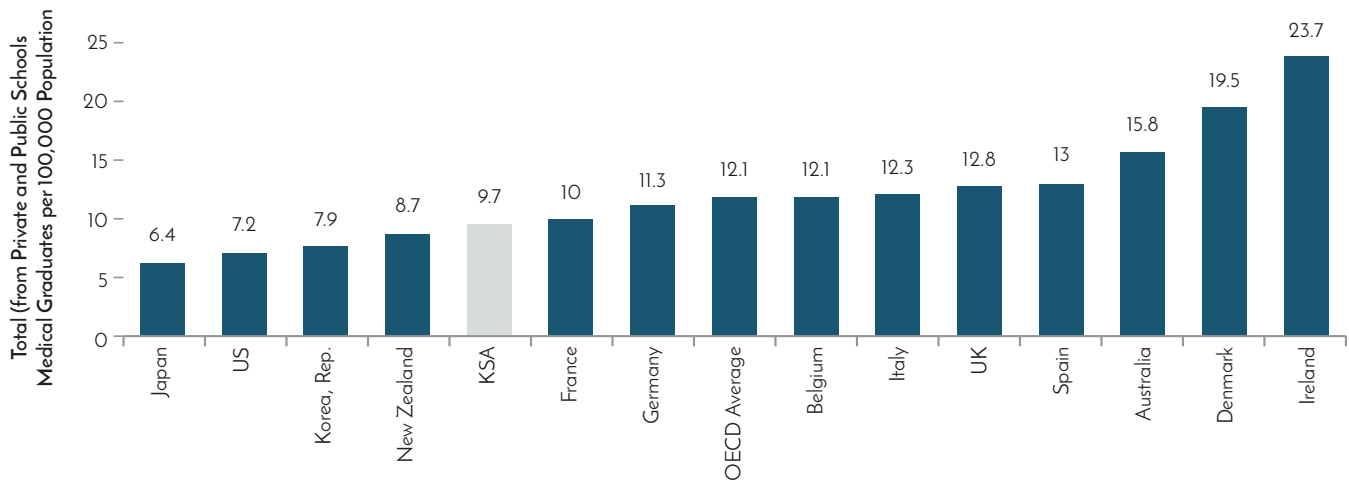
Proportion of Medical Schools: Public vs Private



Source: SCFHS (2018).

A key challenge to increasing the production of physicians is the insufficient faculty for undergraduate medical education, in particular in the private sector. The faculty shortage is particularly acute in relation to pre-clinical faculty (for example, to teach anatomy, physiology, microbiology, etc.) in private medical schools. The

FIGURE 4 MEDICAL GRADUATES PER 100,000 POPULATION

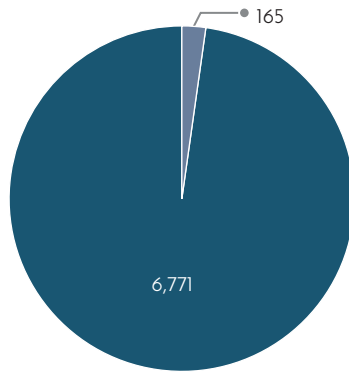


Sources: OCED (2017); SCFHS (2018).

Notes: OECD data are for 2015 or most recent year; KSA data are for 2018.

**FIGURE 5** SAUDI STUDENTS ENROLLED IN POSTGRADUATE PROGRAMS IN KSA AND ABROAD

Postgraduate-Program-Enrolled Students Inside and Outside KSA (2018)



Source: SCFHS (2018).

Note: This includes the number of postgraduate-program-enrolled students inside and outside the country in the specialties of internal medicine, general surgery, gynecology and obstetrics, family medicine, and pediatrics.

vast majority of pre-clinical faculty are foreign expats. There are very few Saudi physicians with PhDs in the country, so there are very few educators for medical school. The clinical faculty, on the other hand, is largely Saudi. There currently are no pipeline programs to train and employ pre-clinical faculty.

A second key challenge is the lack of clinical sites in medical schools to accommodate clinical rotations. Only a few public medical schools across the country have fully operational university hospitals. All other medical schools make use of MOH hospitals for their clinical practice sites. Schools pay physicians in these hospitals to supervise clinical rotations, and sometimes hospital staff agree to do this free of charge. Private undergraduate medical schools face an even greater challenge in securing training sites for their schools. Private sector hospitals are often unwilling to accept students from private medical schools, given the expectations of their paying consumers to receive care from fully qualified medical personnel. Currently, there are no regulations on clinical rotation standards

that guide how such training should be provided.

A third key challenge to scaling up the production of physicians in KSA is the lack of postgraduate training capacity. In KSA, “postgraduate training” refers to the practical experience obtained through fellowships leading to board certification in a clinical setting (hospital environment). Most fellows qualify for the board after four years of clinical training, with some fellowships such as surgery and plastic surgery taking longer (five and six years, respectively). The existing number of fellowships or board posts is insufficient to accommodate all medical school graduates, with many graduates forced to obtain their postgraduate training abroad (see Figure 5) or be placed on a waiting list. The low number of postgraduate places relative to medical school graduates is sometimes blamed on the past expansion of private medical schools, which temporarily flooded the market with more graduates than could be absorbed. The limited number of postgraduate education (PGE) training places is mainly due to a lack of incentives and capacity to provide such training. The capacity constraints of postgraduate places have led to calls not just to stop the expansion of medical schools, but to even further reduce the existing number of schools and places.

Although physician migration is not the overwhelming issue, physicians exit the clinical workforce prematurely in a variety of different ways. Dissatisfaction with the existing salary arrangement and burnout from increased patient loads and increasingly complex medical systems are frequently cited as reasons for the premature exit from clinical practice (Agha et al. 2015; Bawakid et al. 2017). Physicians have many options for other career paths: they are sought after in Saudi Arabia in leadership positions. When they stay in clinical institutions (for example, working in a non-clinical job in a hospital) their clinical experience is still an asset. They also pursue jobs in health charities and foundations, pharmaceutical companies, and medical equipment companies.

## Opportunities to Increase Availability

A critical pre-condition for the expansion of public undergraduate medical education in KSA is the expansion of postgraduate training places and centers. The SCFHS is aiming to encourage training centers to increase capacity and for more training centers offering postgraduate training to be approved for development. More needs to be done to meet the demand for domestic fellowships including to 1) incentivize the provision of postgraduate scholarships, 2) increase incentives for postgraduate teaching, and 3) invest in the training and recruitment of teaching faculty.

The government can support the expansion of the number of fellowships through a combination of mandates and incentives. For example, the government can require any hospital (public or private) over a certain number of beds or any outpatient system above a certain annual volume of patients to participate in PGE. The government could also mandate that facilities that want to have advanced equipment such as PET scans or perform certain advanced procedures such as organ transplants must have PGE programs.

The government can support PGE by increasing the incentives awarded for resident teaching. The lack of technical capacity to provide training is a clear bottleneck for expanding postgraduate training opportunities. The lack of faculty is a key impediment for postgraduate training. Right now, PGE faculty earn 2,000 Saudi riyals a month to be involved in resident training, so more investments should be made to incentivize individuals to become clinical faculty. Incentives do not need to come only in the form of payments to faculty but can also be in the form of preferred access to research funding.

Investments should focus on improving the teaching capacity of young physicians and recruiting more from abroad to fill gaps. The government can create a shared curriculum to train physicians in pedagogy, so they can

properly train young physicians. This curriculum could include the basics of adult learning and case-based teaching. The government could also develop and make available fellowship curricula so that each PGE program does not have to create its own curricula from scratch. Increasing investments in recruiting faculty from abroad can also be considered. Traditionally, KSA has not recruited clinical faculty outside of North America or Europe. Now that India, other countries in Asia, and South Africa have world-class medical centers, some clinical faculty can be recruited from these countries as well. These efforts can include traditional longer assignments of one to two years or shorter assignments of three to six months. Part of the job descriptions of these foreign clinical faculty can be to train fellows as well as to prepare Saudi physicians to be clinical faculty.

Expanding private sector training centers and slots to provide postgraduate training for fellows is an option, but only if quality can be guaranteed. The private sector could expand its offering of postgraduate education opportunities, but this requires specific efforts to ensure the quality of the training provided. Past experience in the growth of postgraduate training opportunities in the private sector shows that some private training centers that offered fellowships were closed following their failure to pass accreditation by the SCFHS. Box 2 provides a brief overview of how the US government supports PGE.

### BOX 2: OF INTEREST: GOVERNMENT PGE SUPPORT IN THE UNITED STATES

The US government invests \$15 billion per year in PGE residency/fellowship positions (Congressional Research Service 2017). In addition, Medicare and Medicaid (public health insurance for the elderly and the poor respectively) pay academic medical centers a 10 percent premium over what they pay nonacademic medical centers.

Once the limited postgraduate capacity has been addressed, efforts can focus on increasing the number of undergraduate training places. This could be done in particular by 1) increasing the number of Saudi faculty in medical schools, particularly preclinical faculty and in private sector schools, and 2) increasing the opportunities for clinical training rotations during undergraduate studies.

Increasing the number of Saudi preclinical faculty in undergraduate medical schools, especially for preclinical streams, is critical. One solution could be to incentivize or encourage more existing clinicians to obtain their PhDs in relevant topics, which would allow them to continue to engage in clinical practice in addition to having teaching responsibilities in a medical school. In addition, Saudi Arabia can set up professor pipeline training programs in which the most promising fellows are given training and experience in pedagogy and set on a pathway to become teaching professors. This pipeline could specifically emphasize preclinical subjects such as anatomy and biochemistry. Incentives such as protected research time or improved salaries would be helpful to motivate a greater number of Saudi nationals to become faculty. Another option is to re-examine the need for faculty to have PhDs. With a strong curriculum, a master's degree in a subject is usually more than sufficient to teach medical students preclinical science subjects.

Increasing the number of qualified faculty available in the private sector is also important. The biggest faculty shortage of qualified professors currently exists in private sector medical schools. Public medical schools in KSA often attract the highest caliber faculty, with private medical schools struggling to fill needed posts. A solution could be to ease up restrictions on moonlighting for faculty and clinicians in the public sector. Faculty in public medical schools, as well as clinicians in the public sector, are currently not allowed to moonlight as professors in private medical schools, although this is largely going on informally. Allowing public medical

school faculty to do so, while at the same time ensuring that their public sector students and patients have their needs met, will go a long way toward reducing the faculty shortage in private medical schools. Furthermore, the increased sources of pay would be an incentive to become faculty. This could be done in addition to offering retired physicians and academics flexible part-time teaching and mentoring positions.

Another important intervention is to increase the capacity for clinical rotations in undergraduate medical studies. The lack of access to clinical training sites during undergraduate training is a key bottleneck for the expansion of student enrollment in existing medical schools, especially private schools. Only very few medical schools have teaching hospitals or training sites attached (that are owned by the Ministry of Education, or MOE), with most medical schools contracting sites or staff in the MOH or equivalent sector hospitals. The arrangement for securing sites for clinical rotations should not be left to each medical school. There should be guidelines and regulations spanning the sector and enforcing a strategy for clinical rotations, training capacity, and partnerships for all medical schools and sectors. Section 5 of this report, on opportunities to improve performance through quality, provides an example of what supportive regulation of clinical rotations may include.

Expanding medical education and maintaining quality by considering other innovative solutions, including flipped classrooms and a hub-and-spoke model, should also be considered. Existing medical schools can be expanded, and new schools established, while providing a high-quality education. One way to achieve this is to expand existing high-quality schools with flipped classrooms and engaging fellows to reinforce the lectures of the professors. The classroom can be “flipped” with students watching taped lectures and then having hour-long discussions and question-and-answer sessions with the professors. This maximizes the interactive time students have with professors. Students



can then meet in smaller working groups with fellows to review case studies and homework and answer additional questions. Remote “spokes” can be established to which the professors travel to lecture or lecture via videoconference, and medical students work closely with the relevant fellowship-trained attendings in the spokes. The remote spokes will give medical students greater access to patients and attendings than they would get in teaching hospitals, in which there are sometimes as many students as patients.

Additional efforts could ensure high rates of licensure exam passes, especially given that currently a substantial number of individuals do not pass this test, thereby keeping workers out of the workforce. Graduates from private medical schools, specifically, register much lower pass rates for licensure exams than their public medical school counterparts. A key focus could be on scaling up and providing standardized courses that prepare students for licensure exams. The King Saud bin Abdulaziz University for Health Sciences (KSAU-HS) and the National Guard already provide this by offering a “progress test” that mimics the licensure exam and allows students to prepare. This pre-testing identifies students at risk of failing and can identify their weak areas so they can engage in targeted studying. Some courses that provide preparation also exist in the private sector. All of this could be scaled up, or the actual curricula in each medical school could be sufficiently adjusted to include exam preparation and to correct any mismatches between curriculum content and licensure exam content. Measures such as supplying a standard curriculum, introducing more testing, and Objective Structured Clinical Exams (OSCEs) would also increase the licensure pass rates. The licensing exam can be reassessed to determine whether its content is relevant to creating skilled clinicians.

The unified salary scale should be reviewed, as it is often considered a source of dissatisfaction for physicians and potential labor market exit. While overall physicians’ salaries are generally

high, the unified salary scale, which was introduced by a royal decree in 2008, means that regardless of what Saudi physicians do and where they work, they get paid the same. The unified salary scale generally led to an increase in the salaries for MOH staff, but a decrease in salaries and benefits for physicians in other sectors. This demotivated physicians in other sectors and also motivated some physicians to seek out work with lower workloads, since these jobs are paid the same as those with high patient volume and workloads. In addition, the national salary scale is often considerably lower than the salary scale for foreign recruitment. Although Saudi physicians earn more than physicians from developing countries working in KSA, they earn less than European and North American physicians working in the country. While arguments justifying this pay gap exist, it nevertheless results in dissatisfaction of local staff. The salary scale should be reviewed and adjusted to the position that is being recruited for, taking into account the workload and occupational risk as well as the supply and demand for that type of physician.

Burnout could be addressed by reducing patient loads and providing support toward navigating increasing complexities of the medical system. Burnout has been identified as one of the main causes of physicians switching to

## SOME POINTS OF NOTE

Some facilities, including the King Faisal Specialist Hospital & Research Center (KFSH&RC), are exempt from the unified salary scale.

The move toward corporatization is expected to eliminate the unified salary scale, with corporates expecting autonomy over hiring, firing, attracting, and remunerating staff according to market rates.

Medical cities (self-operational hospitals) have their unified salary scale for the hire of expats. Usually, the salary and benefits of international staff are linked to the country where their education was received.

nonclinical work or retiring early. As the Saudi system is transformed, it can be made into a system that works for all. This can be done by staffing units appropriately so that physicians are not forced to care for too many patients at a time, and standards can be set for how many patients a physician should be able to care for per hour depending on the complexity of the patients. Strengthening support services to navigate increased complexities of the medical system is also important. Concerns exist that rapid changes in the practice of medicine may drive many physicians out of clinical care. One area of major concern is the effect of Electronic Medical Records (EMRs) on physician satisfaction. User-friendly EMRs should be chosen or scribes should be employed to enable physicians to focus on their patients and the practice of medicine.

Reducing potential for moral injury of physicians should also be considered. “Moral injury” is defined as the damage done to a person’s conscience or moral compass when that person perpetrates, witnesses, or fails to prevent acts that transgress one’s own moral beliefs, values, or ethical codes of conduct ((Syracuse, no date). Moral injury has recently been identified as a cause for physician job dissatisfaction in the United States. This moral injury is viewed as a result of US physicians who pursued a career in medicine and were trained to help all people regardless of race, community, or ability to pay, but actually are working in a grossly inequitable health care system. As the Saudi system switches from a predominantly government-run system to a more private-for-profit system, it is important to keep an eye on the potential for moral injury and prevent it.

## SKILL MIX OF PHYSICIANS

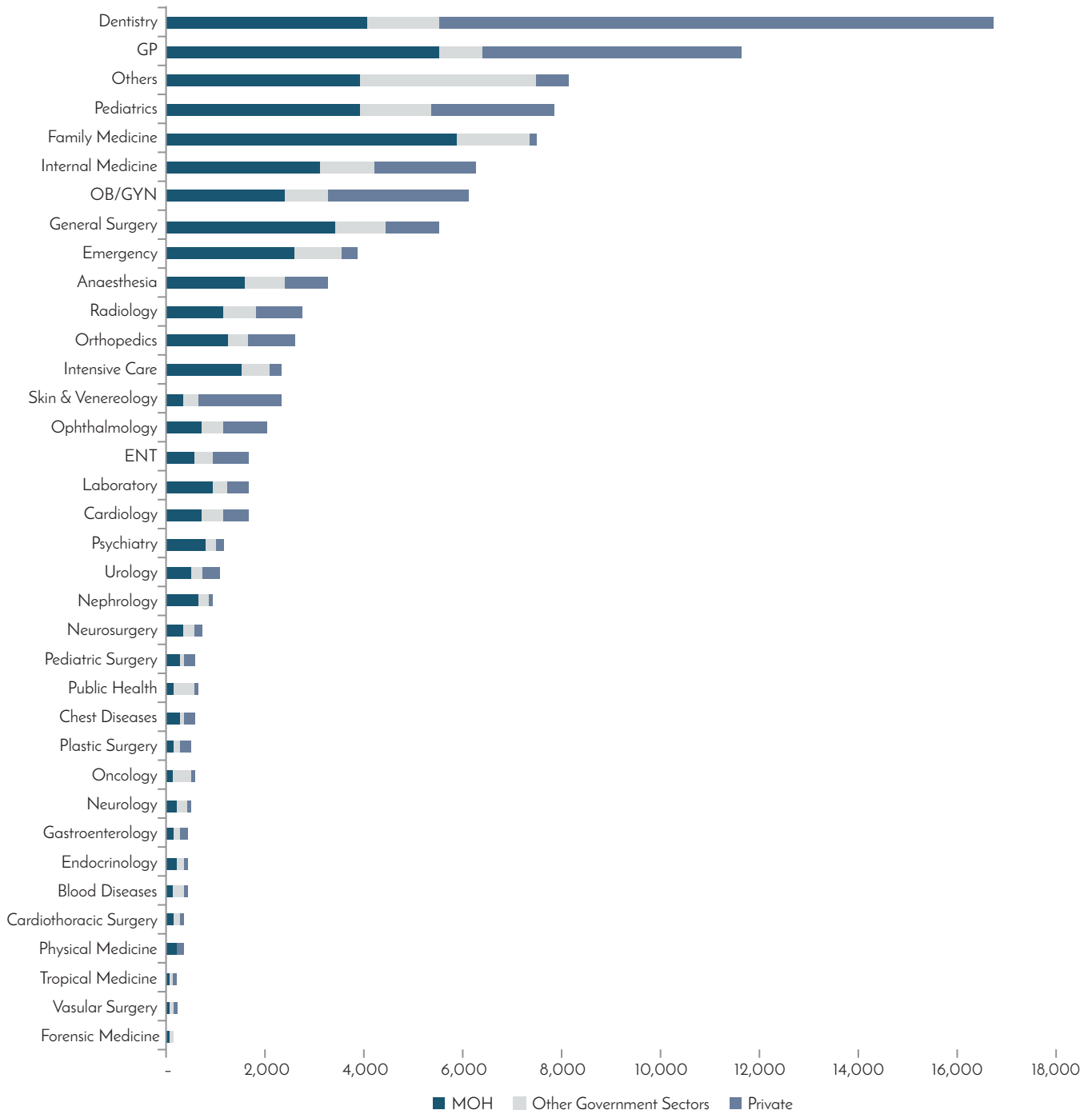
When combining Saudi and non-Saudi professionals, the skill mix is varied, with some specializations seemingly well represented and others less so. Family medicine practitioners, pediatricians, obstetrician/gynecologists (OB/GYNs), and general practitioners (GPs) are considerably well represented compared with many of the other specializations or subspecializations that exist in Saudi Arabia (MOH 2018; see Figure 6). For example, there are more dermatologists/venerologists than cardiologists in the country. The high levels of referrals abroad highlight the shortage of some specialized expertise needed in the country, with an acute shortage of select Saudi specialty and subspecialty physicians. Some of the reported specialists that are short in supply include anesthesiologists, intensive care specialists, cardiologists, and orthopedists. Some of the subspecialties in short supply include oncology surgeons, pelvic, spine, NICU, and various OB/GYN subspecialists such as IVF and adolescent health specialists. On the other hand, there is an increasing abundance in some subspecialties that which are out of line with market needs; for example, neurosurgeons (an estimated 25 of them are found in Riyadh alone), or more theoretical specialists such as aerospace surgeons. It is thought that physicians have pursued these oversupplied specialists in part because their salaries are higher than other specialties.

When disaggregating some of the professionals by nationality, it becomes apparent that for some critical specializations (such as primary care specializations) Saudis are in short supply. Family and primary care specialties, seemingly well represented in the aggregate, remain among the rarest in KSA, with the majority of such specialties filled by non-Saudis (see Figure 7, for example, from MOH primary health care centers). This is particularly problematic given the need and importance of primary and family care physicians on the front line and their potential to address the burden of disease risk factors as cost-effectively possible. Indeed, employers

address these shortages by 1) hiring foreign nationals—not easy since some specialist and subspecialist salaries offered are often not comparable with international salaries, 2) sponsoring national staff to receive fellowships abroad, and 3) sending individuals abroad to receive specialist care that may not exist in KSA.

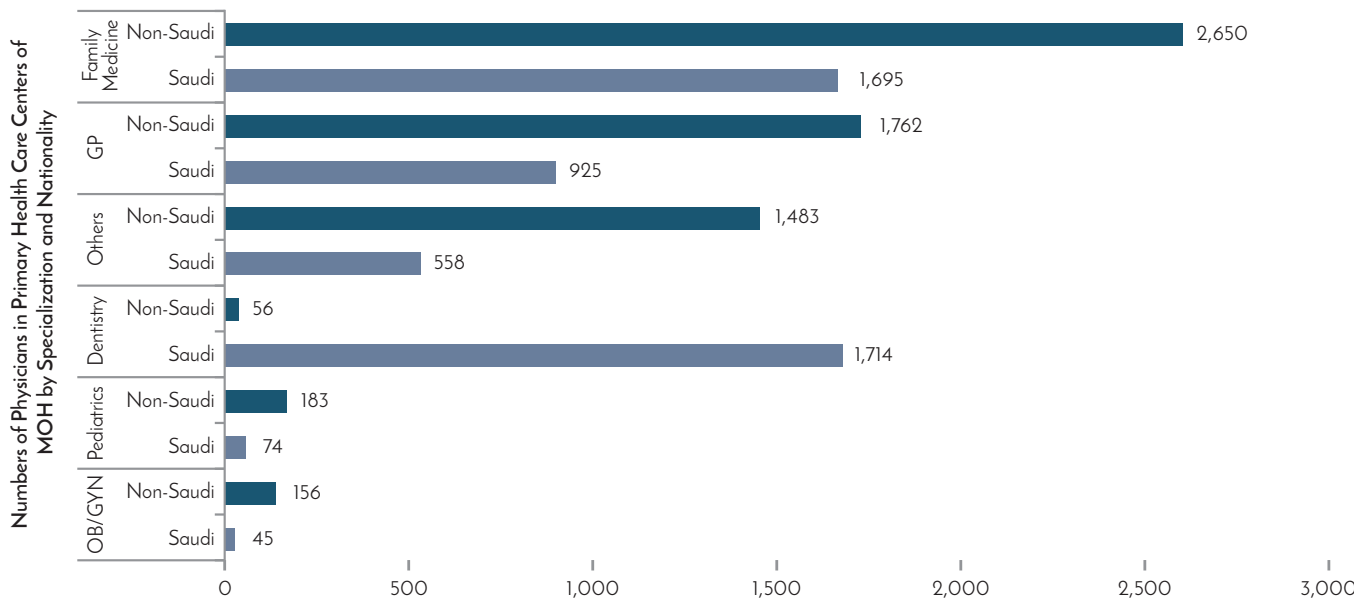
Classification on the salary scale is currently linked to degrees, which is creating a skill mix out of line with market demand. With the unified salary scale, the one way to jump into higher salary categories within the salary scale is by obtaining postgraduate degrees, regardless of

FIGURE 6 PHYSICIAN SPECIALTY BY SECTOR (SAUDIS VS NON-SAUDIS)



Source: MOH (2018).

FIGURE 7 SELECT PRIMARY SPECIALTIES (MOH ONLY), SAUDI VS NON-SAUDI NATIONALS



Source: MOH (2018).

whether those degrees are needed or not. The Ministry of Civil Service pays bonuses and additional salaries based on the SCFHS physician classification. All of this has created an incentive for physicians to specialize (some in theoretical degrees) to advance in their salary category, which is leading to specialties and subspecialties (some of them very low in demand) that are not in line with market needs. The existing salary scale also reduces the incentive of physicians to become general or family practitioners.

### Opportunities to Optimize Skill Mix

Increasing the attractiveness for physicians to enter postgraduate training in family or general medicine by introducing salary differentials or reducing length of study should be considered. Until recently, it took four years to become board-certified in family medicine and general subspecialties in Saudi Arabia. A common

question posted by medical students is: why specialize in family medicine when the four-year board is just as long as studying for a subspecialty, but subspecialization would place them higher on the salary scale. Being a family or general practitioner means there would be no difference in payment; therefore other incentives are needed. As a result, Saudi Arabia reduced the number of years required for the family and general medicine board from four years to three years (see Box 3). The hope is that this will increase the number of individuals entering family and general medicine. The effort is on the right track, and KSA may want to consider further reducing the family medicine track to a two-year board in line with some boards in countries such as Canada and Brazil (Arya 2017).

Efforts should focus on increasing innovative postgraduate specializations. KSA has an opportunity to reduce its dependency on referrals abroad and scale up its specialized training

### BOX 3: ONGOING EFFORTS TO ACCELERATE TRAINING OF GENERAL AND FAMILY MEDICINE IN KSA.

In order to have faster and more affordable production of more high-quality physicians, Saudi Arabia started establishing accelerated programs for training of internal medicine physicians and family practitioners in 2019. These programs, such as the one at the Unaizah College of Medicine at Qassim University, are modeled after accelerated United States in the United States and Canada (Al-Shafei 2019). The program that is currently in place has reduced the number of years to study family care from four years to three years.

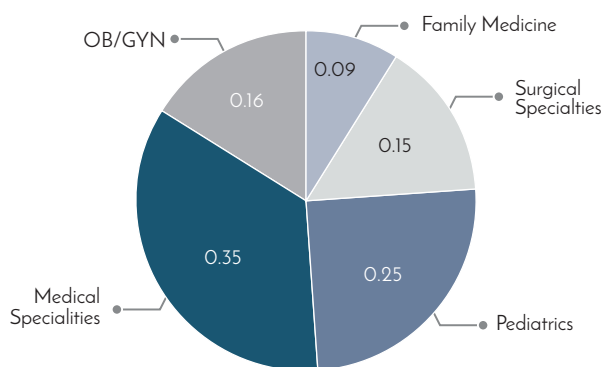
programs for specializations that are in need. The distribution of existing postgraduate training places by specialty is depicted in Figure 8. Saudi Arabia is already considering an accelerated program for junior specialists in the form of fellowships that are one or two years, rather than the traditional two- to four-year fellowships that lead to becoming a board-certified senior specialist. The junior or “practical” fellowship-trained physicians would be able to care for the majority of patients referred to them. However, patients with rare, complex, or brittle conditions would be referred to a specialist

who had completed a full fellowship. It can be envisioned that, in smaller health facilities, only practical specialists would be present whereas in large academic and referral centers, teams of practical and senior specialists would work together.

A focus on scholarships or education in the private sector to support and incentivize specialized career paths could be considered. The private medical education experience in the United States, which saddles physicians with large levels of educational debt (approximately \$200,000 per new graduate), has demonstrated that the debt causes new graduates to preferentially pursue higher-paid specialty care over lower-paid primary care. The policy of transferring the cost of medical education to the student was intended to relieve governments of the cost of medical education, but ultimately backfired by aggravating physician primary care/specialty imbalances at the national level. Although there can be some role for transferring of costs to students, it is important to restrict the costs so that they do not overly influence physician career choice. This can be addressed by either capping the debt of medical students (for example, providing scholarships so that no student has to take out more than an agreed upon monetary amount), or by providing scholarships or subsidies linked to a specifically needed specialty.

**FIGURE 8** SUMMARY OF POSTGRADUATE TRAINING PLACES BY SPECIALTY

Distribution of Postgraduate Physician Trainees by Specialty Group (2018)



Source: SCFHS (2018).

Note: This is a percentage of all postgraduate-program-enrolled students inside and outside the country.

The salary classification of physicians should be linked to need, either specialty or geographic. There should be a move to make salaries based

on the need in the market rather than based on the years of training, high-level degrees, and perceived difficulty of the specialty. The best global example of matching physician salaries with market need is Thailand (Wibulpolprasert and Pengpaibon 2003), where salaries are based on the market need in terms of primary care and shortage specialties as well as location (urban, rural, remote). Since the demand for entering medical school in KSA exceeds the number of available places, it is hard to

make an argument that the salaries of physicians need to be increased across the board. However, it can be argued that salaries or benefits should be increased for primary care, shortage specialties, and positions with high rates of vacancies. Discrete choice experiments could be performed to design the most cost-effective attraction and retention packages. This would be an evidence-based way to create packages that address physicians' needs and address the barriers to working in these positions.





# DISTRIBUTION OF PHYSICIANS

# 4

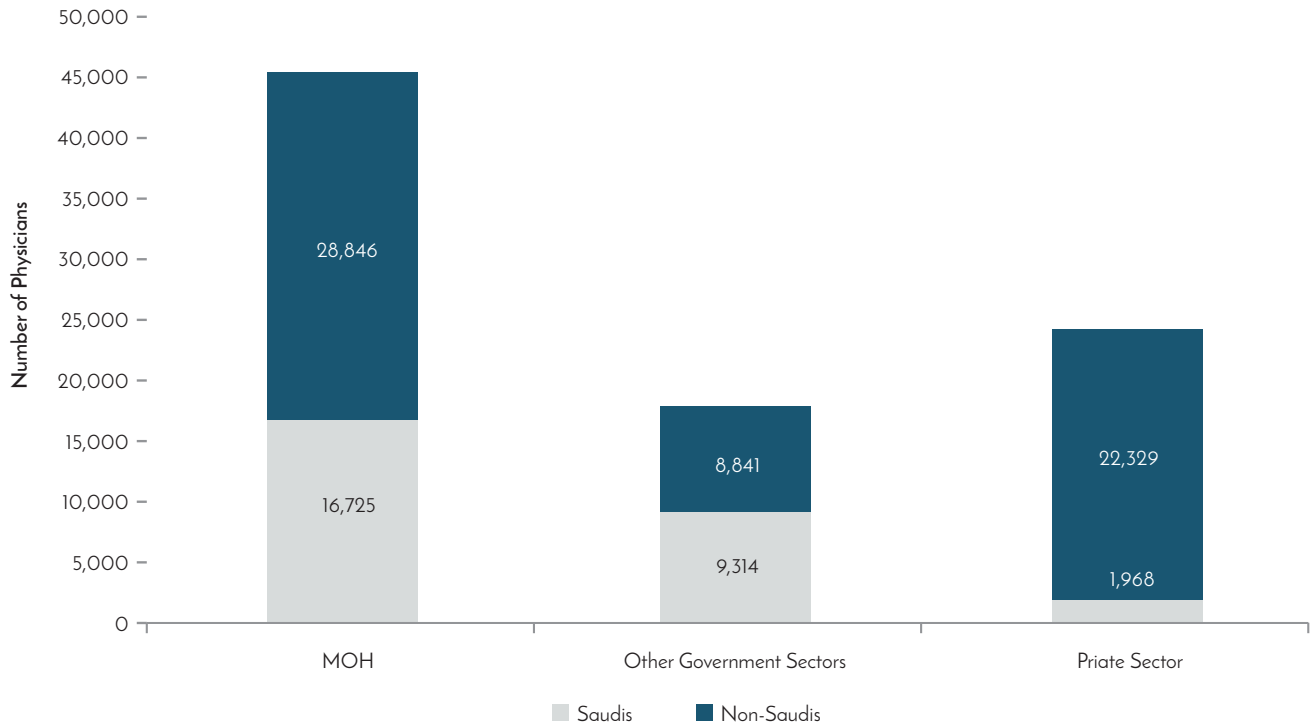
Physicians are unevenly distributed across sectors in KSA. The MOH is the largest employer of Saudi physicians, followed by the other governmental sectors. The private sector largely employs non-Saudi nationals (see Figure 9). In terms of sheer numbers, the largest number of Saudi physicians is found in the MOH. Although there is little definitive research, anecdotal evidence suggests that the clustering of Saudi physicians in MOH facilities has less to do with attractiveness of the sector and more to do with the difficulty for Saudi physicians to get jobs in other sectors. In fact, the National Guard and military hospitals are often considered more attractive because of the potential military sector pay and additional bonuses offered. The King Faisal Specialist Hospital and Research Center (KFSH&RC) is also seen as more attractive, as it is exempt from the salary scale. The private sector is largely considered the least attractive sector for less-experienced Saudi nationals because it has longer working hours and lower salaries than some of the government sectors. However, for more experienced or subspecialized Saudi physicians, the private sector can be an attractive option with high salaries and flexibility. Among these experienced physicians, there is a desire for a dual practice law that would allow Saudi physicians to practice in both the public and the private sector.

Physicians are also unevenly distributed across levels of service delivery. MOH Saudi physicians are disproportionately clustered at the hospital level, with the primary level largely staffed by foreign nationals, albeit more Saudis are starting to work in primary care centers. Primary health care (PHC) services provide a large part of the basic health care to the Saudi community. According to the MOH, 82 percent of the total visits to MOH institutions occurred in PHC centers. Yet an estimated 56 percent of primary care is staffed by non-Saudis, with only about 26 percent of Saudis working at the primary level (see Figure 10). This is partly linked to the fact

that the number of general and family practitioners is very low in Saudi Arabia because it is not considered a very attractive position. Although more Saudi physicians work at the hospital than at the primary level, the shortage of Saudi physicians relative to non-Saudi physicians is nonetheless also evident (MOH 2018).

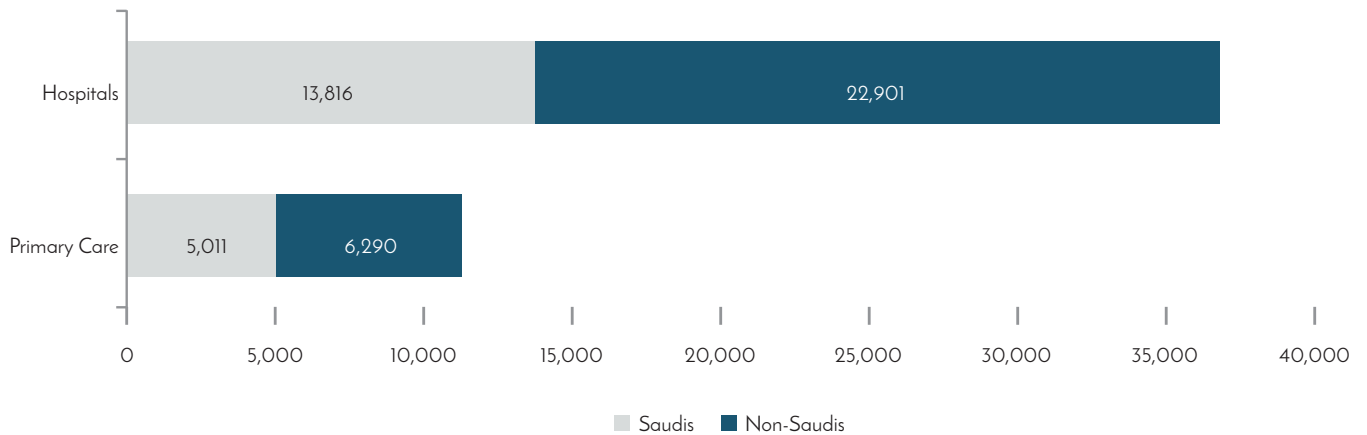
Physicians are also unevenly distributed across geographical divisions. The vast majority of Saudi physicians are clustered in facilities in more urban locations and regions, with more remote locations largely staffed by foreign physicians (see Figure 11). Physicians, particularly

**FIGURE 9** DISTRIBUTION OF PHYSICIANS BY SECTOR



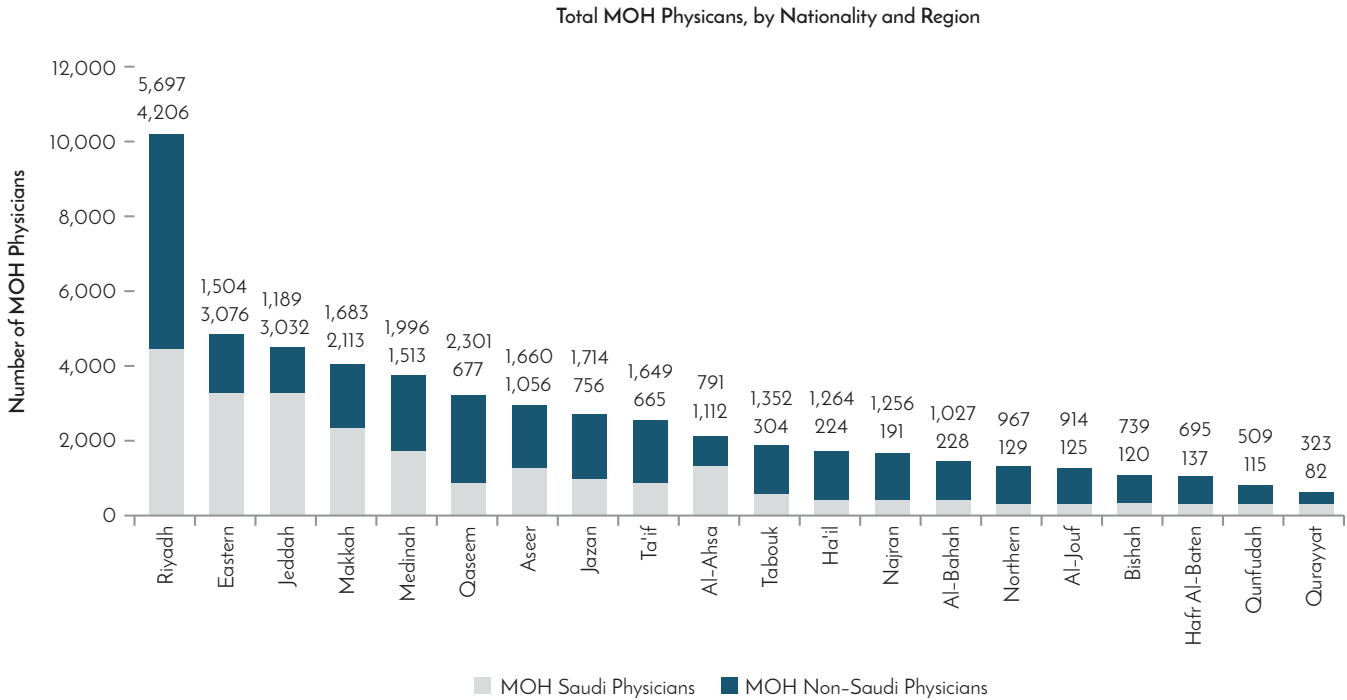
Source: MOH (2018).

**FIGURE 10** DISTRIBUTION OF MOH PHYSICIANS IN HOSPITALS AND PRIMARY CARE CENTERS BY NATIONALITY



Source: MOH (2018).

FIGURE 11 DISTRIBUTION OF MOH PHYSICIANS BY NATIONALITY AND REGION



Source: MOH (2018).  
 Note: Physicians include dentists.

specialty physicians, are the professional group that is most clustered in metropolitan areas and least available in rural areas. The shortage of Saudi physicians in rural locations is largely driven by poorer living and working conditions, which are particularly pronounced for physicians who do not come from rural areas or who are unaccustomed to life there. Some of the factors that make rural postings less attractive for physicians include 1) salaries that do not cover the opportunity cost of living in a rural area, 2) inadequate housing, 3) fewer opportunities for continued education, 4) fewer work opportunities for spouses, 5) limited schooling for children, and 6) fewer fee-for-service or moonlighting/private sector opportunities. In addition to the disincentives mentioned above, very few physicians are from these rural areas, so they lack the family and tribal ties that would draw them to those areas.

## Opportunities to Optimize Distribution

### Sector Distribution

One possible way to improve the distribution of physicians across sectors is for employers to offer innovative incentives within the legalities of the salary scale. As already noted, Saudi physicians are paid according to the national harmonized salary scale (with the exception of the private sector or a few organizations that are exempted from the scale). Employers such as self-operating hospitals find the salary scale to be a major bottleneck for hiring some specialty-trained physicians who would be more interested in obtaining jobs with employers who do not fall under the salary scale. Innovative approaches can be considered to legally increase the benefits for recruits, such

as offering different types of allowances, covering education leave, offering positions as the head of a department, reducing required weekly work hours, offering part-time contracts, reducing the number of patients, adding a mid-level provider who helps with patients, and offering postgraduate specialization training opportunities. King Saud Medical City, for example, has specialized in trauma, which is attractive for a large number of Saudi physicians who can receive such a fellowship on site. This fellowship moreover is of the relatively short duration of one year and is accredited by the SCFHS (albeit not academically). An educational director is often in place to facilitate such fellowship opportunities.

Autonomy over recruitment is also critical to improve sectoral distribution. The plan to initially divide the country into five corporates (phase 1) with clusters underneath is expected to improve the hiring capacity of the MOH and increase the attractiveness of the MOH for higher caliber staff. Reform efforts will decentralize and provide autonomy to the corporates to finance, plan, recruit, and manage staff for their clusters based on need. This will result in a move away from the centralized recruitment and hiring practices currently in place in the MOH sector. The current process of physicians applying to the Ministry of Civil Service and the Ministry of Labor and then having to wait for the MOH to deploy staff will disappear—corporates will be able to hire directly according to their need and offer competitive remuneration packages. It will bring the MOH sector on par with the other government sectors such as the National Guard and the Ministry of Interior, as well as the private sector, and move away from civil servant hire to contractor hire. This added autonomy in the MOH sector is expected to result in greater quality and quantity of services in part by incentivizing needs-based hiring of physicians. These anticipated changes are seen as a much-needed reform to attract higher caliber staff, including advanced physicians, to the MOH sector. The role of the central MOH will be restricted to its regulatory function.

### *Distribution across Levels*

Increasing the number of Saudi physicians available to work at the primary level can be accomplished by increasing the number of general and family practitioners who graduate. KSA needs to substantially increase the number of family medicine training places, both the shorter “practical” training and the longer academic training. The main priority should be on expanding the one-year training programs required after medical school to practice independently. It is especially preferential to set up these new training programs in underserved governorates and underserved communities, perhaps with requirements to serve in these communities afterward. If there are not an adequate number of applicants for these positions, the incentives need to be improved. These incentive improvements can either be short-term incentives linked to the fellowship (improved fellowship pay, benefits, working conditions, etc.) or long-term incentives linked to pay, benefits, working conditions, and career advancement of practical and academic family practitioners. Close attention should be paid to the market aspects of senior medical students’ decisions regarding which fellowships to apply for and accept.

Another strategy could be instituting one year of primary care service requirement in order to qualify for licensure. The idea behind this mandatory primary care year is twofold: 1) it helps temporarily staff hard-to-fill positions, and 2) some physicians who originally were not attracted to primary care or rural/underserved service may discover that they like it and choose to stay on. For example, Colombia requires one year of “social service” in rural areas, research, public health, or special populations (for example, orphan children) before a license is given. Steps would need to be taken, however, to avoid the pitfalls experienced in Ethiopia, which attempted a similar requirement but found that neighboring countries were willing to hire their physicians with a medical degree alone. Since physicians’ salaries are much higher in those other countries and the requirement was seen

as backfiring, the requirement was removed. Similarly, Ethiopia had to discontinue its lottery of assigning newly graduated physicians to their first posts as many bribed the lottery organizers or ignored their assignment.

### Geographical Distribution

Rural pipeline policies could be considered, which train individuals *from* remote areas, *in* remote areas, and *for* remote areas. This refers to decentralizing the training of physicians to remote areas, preferential admission of students from remote areas, and tailoring curricula specifically applicable to remote communities. This strategy has been studied on every continent and has been found to be very effective (Ono et al. 2014). The decentralization of medical education comes with some challenges that need to be addressed to make schools in locations other than the largest cities a success. In KSA, because of the lack of subspecialists in many administrative regions, it may be necessary for medical schools in those regions to focus on the training of family practitioners. Moreover, high schools with a special focus on training students to enter health profession schools and pursue careers in health (“health services high schools”) can be started in underserved communities to ensure that this pipeline of students is well-supported. This can also address the issue that some rural high schools do not have the robust science classes needed to be a competitive medical school applicants.

Increasing rural incentives could be a complementary addition to rural pipeline policies. It is important to consider strengthening rural incentives, which are currently minimal and need to be large enough to mitigate some of the opportunity costs of working in a remote area. International evidence has shown that such incentives alone cannot work but need to go hand-in-hand with other interventions such as rural pipeline models and decentralized recruitment. The type of incentives provided should be based on evidence such as discrete choice

experiments, which identify the relative importance of different types of monetary and non-monetary incentives. These may include access to housing, postgraduate education and in-service training, access to schools, and family and travel allowances, in addition to any financial bonuses provided.

Innovative bonding schemes in the form of strategies that link scholarships and education sponsorship with temporary requirements to serve in remote areas could be considered. Whereas medical education in public sector schools is free, students educated in the private sector who do not receive government scholarships must bear the main financial burden for the payment of fees. The government could consider increasing the scholarships or subsidies provided to students educated privately, with a requirement being to work in a primary specialty and at a post determined by the government to pay off such support in the form of service to the country. Bonding schemes have been widely applied, with some examples provided in Box 4.

#### BOX 4: GLOBAL EXAMPLES OF INNOVATIVE BONDING SCHEMES

The US government has several programs funding the medical education of primary care physicians with the requirement of fulfilling a placement in a remote area upon graduation for a specified number of years. If this obligation is not fulfilled, the student could be expected to repay the government for the fees incurred. Likewise, the sponsorship of fellowships abroad can be linked to temporary rural service placements upon returning. Thailand has a rural requirement for physicians, which can be bought out at a relatively high price. The funds generated from physicians buying out of their rural obligations are further invested in medical education. Australia has the General Practice Rural Incentives Program to encourage physicians to practice in rural communities (Commonwealth of Australia 2019). The Canadian province of Saskatchewan similarly has a rural incentive program, the Rural Physician Incentive Program, for physicians working in communities of populations of 10,000 or less (Saskdocs 2019).

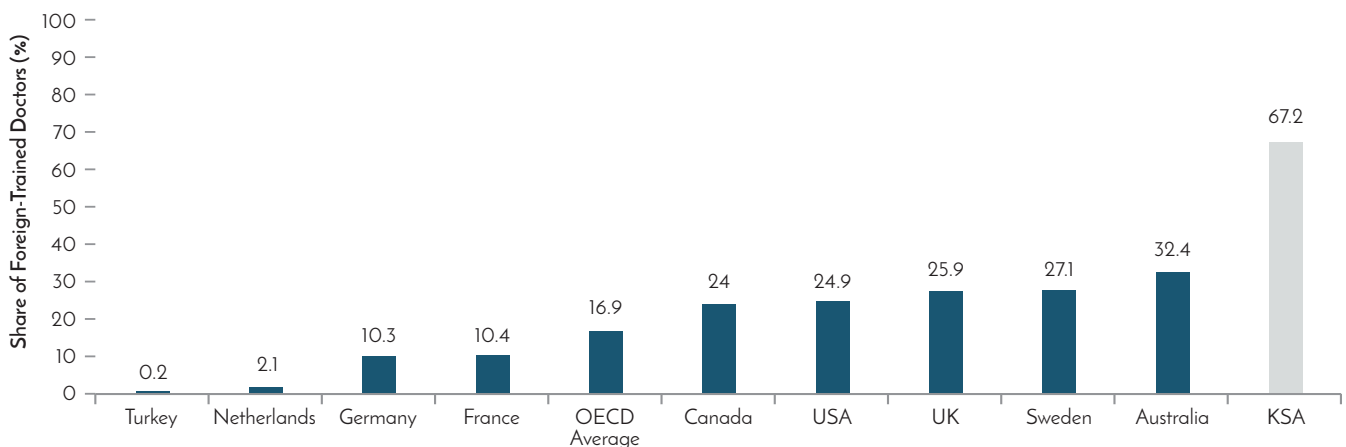
Introducing hub-and-spoke models and more generally telemedicine to rural care could also be considered. This is another way to address the physician maldistribution challenge. In the hub-and-spoke model, patients receive most of their care in rural “spokes” (community hospitals or clinics) with primary care physicians and specialty nurses, and telemedicine connection to specialty physicians. When they require surgery, specialty imaging, or procedures performed by specialty physicians, patients travel to an urban “hub” (regional or academic hospital) to receive

in-person care from a specialty physician. In this model it may be necessary to provide transportation to patients or to pay for travel costs via vouchers or reimbursement of receipts. More generally, telemedicine at the primary and tertiary levels holds the potential to address rural/urban disparities in physician distribution. The MOH has already launched its “937” telemedicine service, which provides physician telemedicine 24/7. The strengths and weaknesses of the 937 service should be analyzed to improve and expand the service and increase patient use throughout KSA.

# PERFORMANCE OF PHYSICIANS

Despite the high caliber of foreign physicians in the country, the current dependency on foreign physicians is sometimes considered a structural barrier to the provision of quality care (see Figure 12). The presence of so many foreign-trained physicians, similar to other health workers, has been argued to pose potential quality risks with regard to 1) language, 2) cultural and religious understanding, 3) quality of pre-service education, 4) variation in pre-service education, and 5) length of service/turnover. There are arguments that suggest that as long as Saudi Arabia relies on foreign physicians it will have limited control over the consistency and quality of their pre-service education and prior work experience. For example, a physician team in a single department may have physicians from four countries who attended different medical schools and have radically different ideas of medical practice.

**FIGURE 12** FOREIGN-TRAINED PHYSICIANS AS A PERCENTAGE OF TOTAL PHYSICIANS



Source: OECD (2017); MOH (2018).

Note: The KSA figure includes only non-Saudis trained abroad so excludes Saudi nationals with international training. OECD figures are from 2015 or most recent year; KSA figure is from 2018.

But the dependency on foreign physicians is partly a result of some of the challenges related to the quality/performance of Saudi physicians. Workforce performance can be seen as a function of 1) competencies and skills of the health worker (linked to education and training-related factors), and 2) the extent to which they exert effort in their work (i.e., are not productive or are absent), which is linked to supportive policies as well as supervision and accountability mechanisms. All the elements of performance are thus influenced by both the education and the management of physicians, with the quality of physicians further influenced by the regulation and licensing in place. While no exhaustive or comprehensive study on physician performance exists, and Saudi physicians overall are considered some of the best-trained physicians in the region, the limited literature does hint at some examples of challenges with the above (see Box 5).

On education, there are indications that the quality of undergraduate and postgraduate training, particularly in the private sector, is not always optimal. Although the quality of medical education in Saudi Arabia is generally regarded as good, there are areas in need of improvement, particularly in the private sector. Private undergraduate training institutions regularly appear as last in the annually published rankings of medical schools. The quality of medical school training affects the extent to which medical education can be scaled up. The

quality of medical school training is affected by a number of different variables, but center around: 1) the lack of sufficient high-quality faculty (few faculty have PhDs or pedagogy training), 2) the largely theoretical nature of undergraduate medical training (see Box 6 for more details), and 3) weaknesses in postgraduate training—particularly in the private sector—in terms of regulation. In the public sector, fellowships are accredited by the SCFHS.

A number of workforce-related challenges that hinder performance can also be highlighted. These include a lack of supportive management policies that motivate health workers and inadequate accountability that managers can exert, particularly over civil servants. Most health facilities have a quality improvement committee and a quality improvement plan. Yet, few facilities have staff wellness or efficiency/cost-effectiveness committees and plans. In addition, job descriptions are not standardized, and managers who possess the skills to lead are not always employed. Payment, moreover, is not linked to performance, leaving physicians with little incentive to perform. The current lack of incentives—including the lack of continued professional development—in some sectors can be discouraging to high performers and encourages dual practice (working in both the public and private sector). Dual practice of physicians in Saudi Arabia is known to be common and has been shown to negatively impact service delivery (SHC 2020).

### BOX 5: EXAMPLES FROM THE LITERATURE OF PHYSICIAN PERFORMANCE CHALLENGES

AlOtaibi et al. (2017) found that only 51 percent of the primary care physicians surveyed in Riyadh had provided appropriate care for childhood obesity. Across all levels of care, time pressure is a quality issue. ALQahtani et al. (2016) found that diagnostic accuracy decreased as less time was given per patient. Knowledge and attitudes vary greatly among physicians. Al-Ahmari et al. (2018) found that physicians' knowledge and attitudes toward ADHD varied by their age, gender, and nationality. Communication to physicians also remains a challenge. Alshahafi and Cheng (2016) found that only 47 percent of physicians were aware that asymptomatic MERS infection was possible, despite multiple communications to physicians on this issue. The study by Al Malki et al. (2018) of patient safety in intensive care units (ICUs) in Saudi Arabia found that, rather than a safety culture, most respondents had a negative attitude toward patient safety. These findings caused the authors to propose interventions focusing on workforce planning, leadership, and patient-centered care.



## BOX 6: WHY UNDERGRADUATE MEDICAL TRAINING IS LARGELY THEORETICAL

One main weakness of some Saudi medical schools is the predominant focus on theoretical training and the insufficient exposure to clinical practice during undergraduate studies, in particularly in private sector schools and some new public medical schools. A key reason for this is the schools' uneasy affiliation with clinical sites and hospitals. Private sector medical schools, for example, have to pay hospitals to allow their medical students to do clinical rotations in their facilities. Therefore, private medical schools tend to see clinical rotations as an expense to be minimized. In addition, some hospitals, in particular private hospitals, are reluctant to take on residents, given the expectations by the fee-paying public to be seen by "proper doctors." When clinical rotations are organized, and a link is established between the medical school and training site, there is often very little oversight over the clinical training provided in the hospitals. Regulation of clinical training across sectors does not exist.

### Opportunities to Maximize Performance

Strategies to ensure and secure a larger number of quality faculty have been discussed above, as the lack of quality faculty is both a bottleneck for expansion and for quality. Section 2 of this report discussed how to increase the numbers, quality, and reach of faculty, including in both the public and private sectors. While these are not discussed here again, a number of other

simple solutions could be considered to ensure the quality of teaching. They include options to provide an optional high-quality curriculum for schools to use, flipped lectures that allow for more in-depth learning, more frequent testing to ensure students are learning, and a potential strategy to flood medical schools with larger numbers than can be trained, weeding out the weaker performers in the first six months. An overview of each of these strategies is provided in Box 7.

## BOX 7: SIMPLE SOLUTIONS TO IMPROVE MEDICAL SCHOOL TEACHING QUALITY

- The MOE, in collaboration with the SHC, could provide an optional high-quality curriculum for schools to use. This curriculum can be adjusted as desired but will guarantee a basic quality of the curriculum and will save the schools the large expense of having to create or update their curriculum. This could also include curricula and case studies for medical school clinical training as well as pedagogy courses for clinical instructors. Poor teaching skills and lack of quality curricula have been cited as significant challenges to expanding medical schools, especially private schools.
- The government can provide, or schools can create, their own videotaped lectures. This will allow schools to "flip the classroom" so that students can watch videotaped lectures then spend an hour in discussion and Q&A with the professor, thus utilizing the professor's time more effectively and engaging the students at a much deeper and more effective level.
- More frequent testing can be utilized to ensure students are learning. Since the ultimate goal of medical school is to produce good clinicians, students can be introduced to clinical work from the first day of medical school and more simulation and OSCEs can be integrated into medical education.
- Another option to consider (if it is culturally appropriate) is to use the French system of admitting more medical students than the program can hold and weeding out the more poorly performing students during the first six months of school.

Strengthening the quality of undergraduate education in terms of clinical exposure is critical from a quality perspective. One solution is to increase the amount of supportive regulation of clinical rotations. “Supportive regulation” is regulation that actively supports higher quality rather than merely being punitive in nature. Potential supportive regulation of clinical rotations include: 1) defining how many hours of clinical experience in specific subject areas medical students are required to have (for example, 80 hours internal medicine, 80 hours pediatrics, etc.); 2) requiring medical students to keep a log of the patients and procedures they see during their rotations, including minimum patient numbers; 3) providing a free curriculum for training clinical preceptors/mentors; and 4) providing a free curriculum for clinical rotations, including PowerPoint slides, lecture notes, student handouts, and reading assignments. Most medical school regulators in Europe and North America require a minimal number of clinical hours for graduation. In addition, most residencies and fellowship programs in Europe and North America require trainees to keep logs of the types of patients they care for and the procedures and/or surgeries they perform.

Civil service reform is needed to incentivize civil servants to increase their performance and to make it easier to remove civil servants for poor performance. This issue cuts across all professions. While civil servants need to continue to be protected from mistreatment, there need to be better ways to incentivize them to perform, hold them accountable for poor performance, and create robust improvement plans for poor performers. One method of creating accountability without leaving public employees vulnerable to abuse is to have review panels of a combination of internal managers and external consultants. The panel members can review the performance of the individual and make an independent decision regarding whether their performance is significantly below standard.

Performance-based incentives should be considered and linked to the performance evaluation

process. Under the harmonized salary scale for Saudi physicians, every physician gets the same salary with differentiation occurring only with extra degrees, as discussed previously. There are opportunities for ensuring that part of the salary is linked to the performance of the health worker in regular performance evaluations. It is believed that the shift to the corporates (and the clusters underneath) will eliminate the unified salary scale and provide flexibility and autonomy for corporate health systems to link part of the salary or other forms of compensation, such as training or continued professional development, to performance. There should be a unified approach in how this is done, however, with guidance provided and imposed from the top for all corporates to follow.

Another opportunity to improve performance is to offer more leadership and management programs. Ayuob et al. (2016) have shown such programs to be effective in the Saudi context, especially when started in medical school. The program in the study was launched in King Abdulaziz University in Jeddah; it aimed to develop self-efficacy as leaders, to work collaboratively, to manage conflicts, and to understand that good leadership requires competence in establishing a purpose and discipline. More than 75 percent of the students reported an improvement in leadership skills after the program, in line with other similar programs such as the University of Wisconsin Medical School, which piloted this program. This program can be used as a model to be implemented in other universities and can be subsidized or mandated by government.

Physician teams and workflows could also be redesigned for better performance. Improved staffing results in better overall performance. Improved staffing can occur in the form of more physicians, or it can be achieved more cost-effectively by adding GPs or nurse specialists to the team. Current hospital and outpatient team models have physicians working by themselves together with general nurses. This team design can be improved by having

specialty physicians work with GPs or with advanced practice nurses (APNs) to increase the number of patients each specialty physician can properly care for. Appropriate staffing and improved patient workflows will reduce time pressure on physicians. These GPs or APNs can perform intake histories and physicals, care for less complex patients, and care for follow-up patients as well as make follow-up calls to ensure patient adherence. Mid-level providers can be added to the team to care for low-risk patients. For example, anesthesiologists or nurse-anesthetists can care for low risk patients with routine surgeries. This will enable anesthesiologists to focus on high-risk patients and therefore help alleviate the shortage of anesthesiologists. This enables specialists to practice at the “top of their license” and focus on making difficult diagnoses, designing care plans, and caring for the most challenging cases, including patients with rare, complex, refractory, or brittle conditions.

Job descriptions could be rewritten to add quality, productivity, and customer service expectations so that expectations can be set and reviewed as part of the performance management/support supervision process. Job descriptions are one of the most important tools that managers and human resource teams have. Job descriptions set the expectations for each position and provide insight into the position’s top responsibilities and the working relationships needed for success. Physicians’ job descriptions could be rewritten to properly define the role, and its activities and responsibilities, as well as the points mentioned above.

More health facilities should use clinical guidelines and clinical pathways. Although most of the major academic health facilities in Saudi Arabia use clinical guidelines and pathways, this should be expanded everywhere, including primary care. There is considerable evidence that clinical guidelines (evidence-based general guidelines for screening, diagnosing, and/or treating patients) and clinical pathways (evidence-based order sets for patients hospitalized

with a specific disease) result in better outcomes, shorter hospital stays, and lower costs. Because of the overwhelming amount of new medical research published in journals each year, it is impossible for an individual physician to read and internalize all new articles relevant to their specialty area. The fastest, most reliable pathway to improved quality of care will be the increased use of clinical guidelines and clinical pathways. Such guidelines and pathways are available for the top 20 most common illnesses in children and in adults. These guidelines and pathways can be adapted to the Saudi context and their use made a requirement. The proper use of guidelines and pathways can be integrated in the support supervision of physicians, and the government, as an insurance provider, can require their use.

Dual practice could be recognized and addressed through regulation. Physician dual practice is more the norm than the exception globally. In general, it is better to recognize and regulate dual practice than to ban it and drive it underground. It is important to note that the greatest risk with dual practice is not competition or the “creaming” of wealthy patients. The greatest risk is that critically ill patients in hospitals will not receive timely care because the physician who is scheduled to be at the hospital is away at his or her private practice caring for non-critically ill patients. Therefore, in the recognition and regulation of dual practice, there must be enforcement mechanisms to ensure that physicians are on site when they are scheduled to be or are available and nearby to respond to emergencies within a reasonable period of time if they are off-site. There has been a trend toward noncompete clauses for physicians in the United States. These clauses forbid a physician from working within a certain geographic range during or after (for a period of years) employment with a specific employer. However, these are increasingly being viewed as needlessly preventing long-term practice in the same community and are being increasingly frowned upon (Becker’s ACS Review 2018).



# GOVERNANCE OF THE MARKET FOR PHYSICIANS

# 6

The costs of referrals abroad and high turnover of foreign physicians are high and there is a need to generate greater efficiencies and reduce costs. The current model of relying on foreign physicians increases the cost of medical care due to 1) the need to pay higher wages, 2) the need to pay for accommodation and transportation, and 3) the costs of recruitment and onboarding, especially in the context of low retention/high turnover. There is often the implicit assumption that it is cheaper to use foreign-trained workers (especially in rural and remote facilities) because KSA does not pay for their pre-service education. However, there are hidden costs in the use of foreign workers, and carefully designed programs for Saudi physicians that aim to decrease turnover and improve retention, productivity, and quality can generate greater efficiencies and be more cost-effective than using foreign workers.

Financing and investing in medical education should be a continuing priority and should lead to investment returns. Whether through building new public schools, an increase in the direct financing of private schools, or an increase in the number of scholarships for private medical schools, the government needs to invest more in the medium term in public sector medical education. These expenses should indeed be seen as investments because training and employing more Saudi nationals in medicine will greatly reduce the amount of money paid in salaries for foreign workers, much of which is generally sent back as remittances to their home countries and lost to the Saudi economy. Saudi physicians will spend the majority of their salaries in Saudi Arabia and have a positive multiplier effect in the economy. In addition, educating and employing more Saudis in the health sector, especially in higher-end positions such as physicians, can reduce social welfare payments to families.

Saudi Arabia needs a national health workforce plan, strategy, and or policy document that cuts across all sectors and lays out a clear vision on how to improve workforce challenges, including those faced by physicians. Such efforts should support each sector in its own planning and management activities. In addition, there is often no link between the health sector and the education sector, meaning that the education sector is engaging in activities that do not meet the needs of the health sector. The SHC, the MOH, and the SCFHS should work with the leadership of different professional categories, including physicians, to design and implement a process to reach consensus on the future vision and plans for the health workforce, including physicians in Saudi Arabia. All the main sectors and stakeholders should be involved in this strategy, plan, or policy document, including the MOE and the Ministry of Finance (MOF).

In order to support planning, physician workforce research should be actively encouraged and funded. Planning and reform of the physician workforce, and the development of policies and solutions, need to be evidence-based. Workforce plans should be continuously updated based on the evidence available. Research on the physician workforce in Saudi Arabia is currently very limited. Physician workforce research can be encouraged through a variety of different means. The Saudi Physician Professional Council could publish a list of the 10 most important research questions on the Saudi physician workforce. Some necessary physician workforce questions are included in Box 8.

Further strengthening physician representation across sectors of the health system should be considered. Currently, the main representation for physicians at the national level is the Saudi Physician Professional Council and many different Saudi scientific physician councils, one per specialty or subspecialty, under the umbrella of the SCFHS. There currently does not exist one main scientific council that coordinates

activities uniformly for all specialties or subspecialties. Planning is done in silos and, as a result, not according to market needs. KSA may want to consider setting up one umbrella scientific council (rather than continue the fragmentation of many such councils). Moreover, there is currently no real alignment between the MOE and the SCFHS.

The government may wish to consider appointing a Commissioner of Medical Education. Saudi medical education is going to require significant reform to achieve the envisioned Saudization of the physician workforce. This will be a challenge given the fact that the responsibility for medical education is distributed over multiple ministries and organizations, including the MOE, the MOH, private health facilities, and other sectors. All these organizations will need to cooperate and be coordinated. KSA could consider appointing a Commissioner of Medical Education with broad powers to change medical education policy, request funding, require hospitals to offer clinical rotation, commission the creation of shared public goods to coordinate all stakeholders, and increase the quality and lower the operational costs of medical schools.

#### BOX 8: SOME EXAMPLE QUESTIONS FOR PHYSICIAN RESEARCH

- What will be the need and demand for physicians in 2030?
- What is the projected supply of physicians relative to need in 2030?
- What is the most cost-effective package of incentives that can be made available to incentivize Saudi physicians to work in underserved communities?
- What is the most cost-effective incentive system or payment system that can be made available to incentivize Saudi physicians to maximize their productivity (quality and volume)?
- How can Saudi medical schools be cost-effectively scaled up without compromising quality?
- How can physician jobs, workflows, and work environments be redesigned to improve job satisfaction and decrease stress and burnout?

Strengthening the link between universities and the health sector is also important. Although some of the medical schools have enterprise-wide university data systems that track students and help manage school resources, there is room to improve the sharing of data with the SHC/MOH and the MOE. Many medical schools are still managed on paper or via Excel or Microsoft Word. Switching to appropriate digital school management systems will help improve the efficiency of the schools and the sharing of data needed for planning and policy making. In addition, employers can give medical schools feedback on the knowledge and skills that physicians need to perform well in a rapidly changing health system. These closer ties will also help facilitate the setting up of new clinical opportunities for medical students. Of particular importance is the role of university hospitals, which fall under the MOE. There needs to be a

vision for the role of these hospitals, especially with the privatization of medical schools and the reform of the MOH into clusters managed by corporates.

The MOE and the MOH need to work together to set standards for medical clinical training (clinical rotations). Currently this part of medical education is unregulated and of highly variable quality. There is an opportunity to create a great clinical focus in medical schools that includes specific clinical competencies such as taking histories and physical, differential diagnoses, clinical decision-making, communication skills/bedside manner, and interdisciplinary team skills. The MOH should consider making the acceptance of medical students to rotations mandatory for any hospital (of a certain size), public or private. Unless the challenge of access to patients and access to quality clinical teaching is solved, Saudi Arabia will not be able to become self-sufficient in physicians.

Given the anticipated expansion in medical schools, especially private medical schools, the capacity of the MOE to regulate medical schools needs to be expanded. The MOE along with the National Commission for Academic Accreditation and Assessment are starting to accredit medical schools. This accreditation will help set standards for medical schools, which currently vary greatly across the country. The regulator should take up a supportive role rather than a punitive one. This will be especially important as many

public medical schools are being privatized over the next few years. For example, if a private medical school has insufficient clinical rotations, instead of closing the school down, the MOE can assist the school to identify sites for the needed rotations. The MOE can create public goods/shared resources (such as curricula), identifying gaps and helping to fill them rather than playing a policing role of automatically shutting down schools that do not currently meet standards. The regulator can also be supportive by setting up networks that assist various roles within medical schools, such as deans (modeled after the Association of American Medical Colleges' Council of Deans and "Deans School" for new deans), admissions officers, clinical rotation directors, and so on. Such networks will help improve the performance of Saudi medical schools. It is important that standards be appropriate and not unattainable. For example, while it might make sense to require a PhD for some preclinical faculty (e.g., biochemistry), it may not make sense to require it for other faculty. Instead, more emphasis should be put on the quality of the curriculum and teaching and the implementation of the curriculum.

In a context of rapid reform in the form of corporatization and privatization, physicians should be trained and equipped with new knowledge and skills relevant to this environment. This includes knowledge of, and skills using, such concepts as value-based care, cost-effectiveness, telemedicine, and entrepreneurship (Box 9).

**BOX 9: PREPARING AND SENSITIZING PHYSICIANS FOR A NEW ENVIRONMENT**

*Foster understanding of value-based care:* In an era in which value for money will become increasingly important, physicians will need skills in health economics and an understanding of “value-based health care” (Rappleye 2016). In fact, the Kaiser Health System in the United States cites the need for physicians with health economics skills as one of the main reasons for starting its own medical school. Da’ar and Al Shehri (2019) examined the level of medical economics knowledge and application in Saudi medical education and practice and made recommendations for improvements. Campaigns such as the American Board of Internal Medicine’s “Choosing Wisely” campaign can instruct physicians on common interventions that offer little benefit to patients.

*Foster understanding of cost implications of physician practice patterns:* On the cost-effectiveness front, hospitals need to develop a deeper understanding of how physician practice patterns drive costs. Physician practice patterns include physician prescribing patterns (including prescription of generics versus branded drugs), variations in the lab tests and imaging ordered to diagnose common ailments, and the treatments prescribed to treat common ailments. Once areas of unnecessary expenses are better understood, they can be addressed. Examples of positive interventions include the creation of clinical guidelines and clinical pathways (for example, the creation of a clinical pathway for the diagnosis and treatment of adults with chest pain).

*Encourage entrepreneurship:* One way in which Saudi physicians can adapt to the changing reforms is through the pursuit of entrepreneurship. By having unprecedented insight into the functioning, challenges, and possibilities of the health system, physicians are uniquely positioned to identify and create innovations and new business models in the health sector. The United States has seen a burgeoning of physician entrepreneurship, fostering such organizations as the Society of Physician Entrepreneurs, the American Medical Association (AMA)’s Physician Innovation Network, and AngelMD (a platform for physicians to invest in health sector start-ups). Saudi physicians can be encouraged to become entrepreneurs by setting up entrepreneurship centers in medical schools and professional societies, offering continuing medical education (CME) in physician entrepreneurship, and setting up investment platforms.



# CONCLUSION

This paper was designed as a discussion paper to help inform efforts for more rigorous analysis of the workforce and to provide background material for the development of health workforce plans, policies, and strategies in KSA. It was not designed as a rigorous analysis of the national physician labor market, but as an initial document to pull together some of the perceived challenges and opportunities related to physicians in KSA. The paper was informed by the existing literature on the physician profession, and more directly by the inputs of a select number of key stakeholders of the physician profession in Saudi Arabia. Many opportunities exist to strengthen the physician workforce and thus service delivery and health outcomes in KSA.

Saudi physicians have the immense opportunity to decide what they want Saudi medicine to be known for. The physicians and medical system of many countries have global reputations for the areas in which they make a special impact. For example, the United States is known for medical research and innovation, the United Kingdom of Great Britain and Northern Ireland is known for its cost-effective public National Health System, Japan is known for its community-based system of private GPs, and Australia is known for its rural medicine. Saudi physicians are currently known for mass gathering

medicine because of their medical management of the annual Hajj season and for the separation of conjoined twins (Arnholz 2019). For Saudi physicians, opportunities exist to dominate the fields of precision medicine, artificial intelligence-assisted medicine, telemedicine, and physician entrepreneurship. As Saudi physicians work toward *Vision 2030*, they have the opportunity to decide what they want their system to be known for, while simultaneously improving the availability, distribution, and performance of the national physician workforce to ensure health coverage for all.



## References

- Abuagla, Ayat and Elsheikh Badr. 2016. "Challenges to Implementation of the WHO Global Code of Practice on International Recruitment of Health Personnel: The Case of Sudan." *Human Resources for Health* 14 (Suppl 1): 26. <https://doi.org/10.1186/s12960-016-0117-8>.
- Agha, Adnan, Ayedh Mordy, Eram Anwar, Noha Saleh, Imran Rashid, and Mona Saeed. 2015. "Burnout among Middle-Grade Doctors of Tertiary Care Hospital in Saudi Arabia." *Work (Reading, Mass.)* 51 (4): 839–47. <https://doi.org/10.3233/WOR-141898>.
- Al Malki, Adel, Ruth Endacott, and Kelli Innes. 2018. "Health Professional Perspectives of Patient Safety Issues in Intensive Care Units in Saudi Arabia." *Journal of Nursing Management* 26 (2): 209–18. <https://doi.org/10.1111/jonm.12536>.
- Al-Ahmari, Ayedh A., Rishi K. Bharti, Mohammad S. Al-Shahrani, Muffarah H. Alharthi, Hassan M. Alqarni, and Hassan M. Alshehri. 2018. "Knowledge, Attitude, and Performance of Primary Healthcare Physicians in Aseer Region, Saudi Arabia about Attention Deficit Hyperactivity Disorder." *Journal of Family & Community Medicine* 25 (3): 194–98. [https://doi.org/10.4103/jfcm.JFCM\\_120\\_17](https://doi.org/10.4103/jfcm.JFCM_120_17).
- Alalawi, Zainab M., Monief M. Eid, and Ahmed I. Albarrak. 2016. "Assessment of Picture Archiving and Communication System (PACS) at Three of Ministry of Health Hospitals in Riyadh Region – Content Analysis." *Journal of Infection and Public Health* 9 (6): 713–24. <https://doi.org/10.1016/j.jiph.2016.09.004>.
- Aldrees, Turki, Sami Al-Eissa, Motasim Badri, Ahmed Aljuhayman, and Mohammed Zamakhshary. 2015. "Physician Job Satisfaction in Saudi Arabia: Insights from a Tertiary Hospital Survey." *Annals of Saudi Medicine* 35 (3): 210–13. <https://doi.org/10.5144/0256-4947.2015.210>.
- Aldrees, Turki, Motasim Badri, Tahera Islam, and Khalid Alqahtani. 2015. "Burnout among Otolaryngology Residents in Saudi Arabia: A Multicenter Study." *Journal of Surgical Education* 72 (5): 844–48. <https://doi.org/10.1016/j.jsurg.2015.02.006>.
- Alenezi, Ali Mohammed, Ahmad Aboshaiqah, and Omar Baker. 2018. "Work-Related Stress among Nursing Staff Working in Government Hospitals and Primary Health Care Centres." *International Journal of Nursing Practice* 24 (5): e12676. <https://doi.org/10.1111/ijn.12676>.
- Algahtani, Hussein, Ahmad Aldarmahi, Juan Manlangit, and Bader Shirah. 2017. "Perception of Hospital Accreditation among Health Professionals in Saudi Arabia." *Annals of Saudi Medicine* 37 (4): 326–32. <https://doi.org/10.5144/0256-4947.2017.326>.
- AlHabdan, Mohammed A., Mohammed A. AlAteeq, and Fiasal I. AlJurbou. 2016. "Level of Control

among Patients with Type 2 Diabetes Mellitus Attending Diabetic Clinic under Family Medicine Compared to Diabetic Clinic under Endocrinology." *Diabetes, Metabolic Syndrome and Obesity: Targets and Therapy* 9: 119–24. <https://doi.org/10.2147/DMSO.S101877>.

Alhajjaj, Fahad Saleh and Abdullah Saleh Al-damigh. 2017. "Assessment of Readiness of Academic Emergency Departments in the Central Region of Saudi Arabia to Receive a Sick Child." *International Journal of Health Sciences* 11 (3): 4–8.

Aljuhani, Shahad H., Saja A. Bamaroof, Thoraya H. Alghamdi, Alhanoof A. Almogbel, Alhanof S. Alkhamash, Batool S. Alkhamash, Amjad A. Bahusayn, et al. 2018. "Public Awareness of Central Nervous System Tumors in the Kingdom of Saudi Arabia." *Neurosciences (Riyadh, Saudi Arabia)* 23 (3): 227–37. <https://doi.org/10.17712/nsj.2018.3.20180055>.

Almutairi, Khalid M., Wadi B. Alonazi, Abdulaziz A. Alodhayani, Jason M. Vinluan, Mahaman Moussa, Abdulrahman S. Al-Ajlan, Khalid Alsaleh, Duna Alruwaimi, and Nader E. Alotai-bi. 2017. "Barriers to Cancer Clinical Trial Participation among Saudi Nationals: A Cross-Sectional Study." *Journal of Religion and Health* 56 (2): 623–34. <https://doi.org/10.1007/s10943-016-0306-8>.

Alosaimi, Fahad D., Auroabah Almufleh, Sana Kazim, and Bandar Aladwani. 2015. "Stress-Coping Strategies among Medical Residents in Saudi Arabia: A Cross-Sectional National Study." *Pakistan Journal of Medical Sciences* 31 (3): 504–9. <https://doi.org/10.12669/pjms.313.7490>.

AlOtaibi, Faiza Nasser, Majeedah AlOtaibi, Shiakhah AlAnazi, Hanan Al-Gethami, Deemah AlAteeq, Rowaydah Mishiddi, and Amna Rehana Siddiqui. 2017. "Childhood and Adolescent Obesity: Primary Health Care Physicians' Perspectives from Riyadh, Saudi Arabia." *Pakistan Journal of Medical Sciences* 33 (1): 100–105. <https://doi.org/10.12669/pjms.331.12118>.

ALQahtani, Dalal A., Jerome I. Rotgans, Silvia Mamede, Ibrahim ALALwan, Mohi Eldin M. Magzoub, Fatheya M. Altayeb, Manahil A. Mohamedani, and Henk G. Schmidt. 2016. "Does Time Pressure Have a Negative Effect on Diagnostic Accuracy?" *Academic Medicine: Journal of the Association of American Medical Colleges* 91 (5): 710–16. <https://doi.org/10.1097/ACM.0000000000001098>.

Alsahafi, Abdullah J. and Allen C. Cheng. 2016. "Knowledge, Attitudes and Behaviours of Healthcare Workers in the Kingdom of Saudi Arabia to MERS Coronavirus and Other Emerging Infectious Diseases." *International Journal of Environmental Research and Public Health* 13 (12). <https://doi.org/10.3390/ijerph13121214>.

Alsaleem, Safar A., Abdullah Alsabaani, Reem S. Alamri, Rawan A. Hadi, Mona H. Alkhayri, Kholoud K. Badawi, Almozn G. Badawi, Abdulaziz A. Alshehri, and Abdulrahman M. Al-Bishi. 2018. "Violence towards Healthcare Workers: A Study Conducted in Abha City, Saudi Arabia." *Journal of Family & Community Medicine* 25 (3): 188–93. [https://doi.org/10.4103/jfcm.JFCM\\_170\\_17](https://doi.org/10.4103/jfcm.JFCM_170_17).

Al-Shafei, Ahmad, Saleh Al-Damegh, Fahad Al-Matham, Abdulrahman Al-Mohaimeed, Abdullah Al-Nafeesah, Ahmad Hamad-Aldosary, Moteb Al-Otaibi, et al. 2019. "Establishment of an Accelerated Doctor of Family Medicine Program at Unaizah College of Medicine, Qassim University, Kingdom of Saudi Arabia." *Journal of Medical Education and Curricular Development* 6 (December): 2382120518818844. <https://doi.org/10.1177/2382120518818844>.

Alsohime, Fahad, Mohamad-Hani Temsah, Ayman Al-Eyadhy, Fahad A. Bashiri, Mowafa Househ, Amr Jamal, Gamal Hasan, Ali A. Alhaboob, Majed Alabdulhafid, and Yasser S. Amer. 2019. "Satisfaction and Perceived Usefulness with Newly-Implemented Electronic Health Records System among Pediatricians at a University Hospital." *Computer Methods and Programs in Biomedicine* 169 (February): 51–57. <https://doi.org/10.1016/j.cmpb.2018.12.026>.

- Al-Tannir, Mohamad, Fahad AlGahtani, Amani Abu-Shaheen, Sawsan Al-Tannir, and Isamme AlFayyad. 2017. "Patient Experiences of Engagement with Care Plans and Healthcare Professionals' Perceptions of That Engagement." *BMC Health Services Research* 17 (1): 853. <https://doi.org/10.1186/s12913-017-2806-y>.
- Arafa, Mostafa A., Karim H. Farhat, and Danny M. Rabah. 2015. "Knowledge and Attitude of the Population toward Cancer Prostate Riyadh, Saudi Arabia." *Urology Annals* 7 (2): 154–58. <https://doi.org/10.4103/0974-7796.150516>.
- Arnholz, Jack, 2019. "Saudi Surgeon Completes 48th Procedure to Separate Conjoined Twins." ABC News, December 2, 2019. <https://abcnews.go.com/International/saudi-surgeon-completes-48th-procedure-separate-conjoined-twins/story?id=67238544>.
- Arya, Neil, Christine Gibson, David Ponka, Cynthia Haq, Stephanie Hansel, Bruce Dahlman, and Katherine Rouleau. 2017. "Family medicine around the World: Overview by Region: The Besroul Papers: A Series on the State of Family Medicine in the World." *Can Fam Physician* 63 (6): 436–41. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5471080/>.
- Ayuob, Nasra Naeim, Faten Mohamed Al Sayes, and Basem Salama El Deek. 2016. "Extracurricular Leadership Development Programme to Prepare Future Saudi Physicians as Leaders." *The Journal of the Pakistan Medical Association* 66 (6): 688–93.
- Bawakid, Khalid, Ola Abdulrashid, Najlaa Mandoura, Hassan Bin Usman Shah, Adel Ibrahim, Noura Mohammad Akkad, and Fauad Mufti. 2017. "Burnout of Physicians Working in Primary Health Care Centers under Ministry of Health Jeddah, Saudi Arabia." *Cureus* 9 (11): e1877. <https://doi.org/10.7759/cureus.1877>.
- Becker's ACS Review. 2018. "Trump Administration Asks States to Scrutinize Non-Compete Clauses for Physicians." *Becker's ASC Review*. <https://www.beckersasc.com/asc-turnarounds-ideas-to-improve-performance/trump-administration-asks-states-to-scrutinize-non-competes-for-physicians.html>.
- Commonwealth of Australia. 2019. General Practice Rural Incentives Program (GPRIP). [http://www.health.gov.au/internet/main/publishing.nsf/Content/general\\_practice\\_rural\\_incentives\\_programme](http://www.health.gov.au/internet/main/publishing.nsf/Content/general_practice_rural_incentives_programme). Accessed May 13, 2019.
- Congressional Research Service. 2017. "Federal Support for Graduate Medical Education: An Overview." <https://fas.org/sgp/crs/misc/R44376.pdf>.
- Da'ar, Omar B. and Ali M. Al Shehri. 2015. "Towards Integration of Health Economics into Medical Education and Clinical Practice in Saudi Arabia." *Medical Teacher* 37 Suppl 1 (April): S56–60. <https://doi.org/10.3109/0142159X.2015.1006611>.
- Ibrahim, Nahla Khamis, Budoor Mohammed Al-Sharabi, Rasha Abdullah Al-Asiri, Najat Abdullah Alotaibi, Wejdan Ibrahim Al-Husaini, Husa Adel Al-Khajjah, Reem Mohammad Rakkah, and Afnan Mohammed Turkistani. 2015. "Perceptions of Clinical Years' Medical Students and Interns towards Assessment Methods Used in King Abdulaziz University, Jeddah." *Pakistan Journal of Medical Sciences* 31 (4): 757–62. <https://doi.org/10.12669/pjms.314.7378>.
- Jahan, Saulat, Abdullah M. Al-Saigul, Ali M. Alharbi, and Muzamil H. Abdelgadir. 2014. "Suitability Assessment of Health Education Brochures in Qassim Province, Kingdom of Saudi Arabia." *Journal of Family & Community Medicine* 21 (3): 186–92. <https://doi.org/10.4103/2230-8229.142974>.
- Khalifa, Mohamed. 2015. "Developing an Emergency Physician Productivity Index Using Descriptive Health Analytics." *Studies in Health Technology and Informatics* 213: 167–70.
- Khan, Mustafa, Parwaiz Khalid, Youssef Al-Said, Edward Cupler, Lamia Almorsy, and Mohamed Khalifa. 2016. "Improving Reports Turnaround

- Time: An Essential Healthcare Quality Dimension." *Studies in Health Technology and Informatics* 226: 205–8.
- Kondro Wayne. 2010. "Medical Errors Increasing because of Complexity of Care and Breakdown in Doctor-Patient Relationship, Physician Consultant Says." *Canadian Medical Association Journal* 182 (13): E645–E646. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2942936/>.
- MOH (Ministry of Health). 2018a. Data obtained from KSA MOH databases, accessed in 2019.
- MOH (Ministry of Health). 2018b. Statistical Yearbook. Kingdom of Saudi Arabia.
- OECD (Organisation for Economic Co-operation and Development). 2017. "Doctors (overall number)," in *Health at a Glance 2017: OECD Indicators*, OECD Publishing, Paris. [https://doi.org/10.1787/health\\_glance-2017-52-en](https://doi.org/10.1787/health_glance-2017-52-en).
- Omrani, Ali S., Mohammed F. Al-Otaibi, Souad M. Al-Ateah, Fahad M. Al-Onazi, Kamran Baig, Noura A. El-Khizzi, and Ali M. Albarrak. 2014. "GeneXpert MTB/RIF Testing in the Management of Patients with Active Tuberculosis: A Real Life Experience from Saudi Arabia." *Infection & Chemotherapy* 46 (1): 30–34. <https://doi.org/10.3947/ic.2014.46.1.30>.
- Ono, Tomoko, Michael Schoenstein, and James Buchan. 2014. "Geographic Imbalances in Doctor Supply and Policy Responses." OECD Health Working Papers, No. 69. Paris: OECD. <https://doi.org/10.1787/5jz5sq5ls1wl-en>.
- Saskdocs. 2019. Saskatchewan's Rural Physician Incentive Program (RPIP). <https://www.saskdocs.ca/work/rpip/>.
- SCFHS (Saudi Commission for Health Specialties). 2018. "The State of the health Saudi Workforce over the Next Ten Years 2018-2027."
- Stanford Medicine. 2017. "Good Leadership, Self-Compassion Key to Tackling Physician Burnout." <http://med.stanford.edu/news/all-news/2017/10/good-leadership-self-compassion-key-to-tackling-physician-burnout.html>.
- Stanford WellMD. 2019. "Doctors Who Take Care of Themselves." <https://wellmd.stanford.edu/>.
- Syracuse University. No date. Syracuse University. No date. Moral Injury Project. <https://moralinjuryproject.syr.edu/>.
- Taher, Saadi, Fayez Hejaili, Ayman Karkar, Faisal Shaheen, Majdah Barahmien, Khalid Al Saran, Mohamed Jondeby, Mohamed Suleiman, and Abdulla Ahmed Al Sayyari. 2014. "Safety Climate in Dialysis Centers in Saudi Arabia: A Multicenter Study." *Journal of Patient Safety* 10 (2): 101–4. <https://doi.org/10.1097/PTS.000000000000111>.
- Wibulpolprasert, Suwit and Paichit Pengpaibon. 2003. "Integrated Strategies to Tackle the Inequitable Distribution of Doctors in Thailand: Four Decades of Experience." *Human Resources for Health* 1: 12. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC317381/>.
- World Bank. Multiple years. *World Development Indicators*. Washington, DC: World Bank.
- Zaghloul, Mohamed S., Juliann Saquib, AbdulRahman Al-Mazrou, and Nazmus Saquib. 2018. "A Qualitative Assessment of the Impact of Handedness among Left-Handed Surgeons in Saudi Arabia." *Laterality* 23 (1): 39–50. <https://doi.org/10.1080/1357650X.2017.1309049>.

# Appendixes 1-3: Relevant Organizations, Medical Schools, Advisory Group Members

## Appendix 1: Organizations Relevant to Saudi Physicians/Practice of Medicine and their Roles

Organization	Role	Comments
<b>Saudi Health Council (SHC)</b>	<ul style="list-style-type: none"> <li>Coordinates health-related policy over all ministries that have a health role, including Ministry of Health, Ministry of Defense, Ministry of Education, Ministry of Interior, etc.</li> </ul>	
<b>Saudi Commission for Health Specialties (SCFHS)</b>	<ul style="list-style-type: none"> <li>Sets the standards for physicians in Saudi Arabia.</li> <li>Regulates physician residency training programs and fellowships.</li> <li>Designs and administers physician exams.</li> </ul>	
<b>Saudi Professional Physicians Council</b>	<ul style="list-style-type: none"> <li>Within the SCFHS</li> </ul>	<ul style="list-style-type: none"> <li>Needs to be strengthened with additional funding and full-time staff</li> </ul>
<b>Saudi Scientific Physicians Councils</b>	<ul style="list-style-type: none"> <li>There are many different scientific councils under the SCFHS, each representing one specialty or subspecialty. There is not one umbrella scientific council Ssc.</li> </ul>	<ul style="list-style-type: none"> <li>There is need for one scientific council as in many other countries.</li> </ul>
<b>Saudi Medical Societies</b>	<ul style="list-style-type: none"> <li>Professional home of Saudi physicians</li> <li>Examples: Saudi Emergency Medicine Society, Saudi Pediatric Society, etc.</li> </ul>	<ul style="list-style-type: none"> <li>Play multiple vital roles including CME, raising clinical standards, diffusing innovations, networking, etc.</li> </ul>
<b>Saudi Branches of American Medical Colleges</b>	<ul style="list-style-type: none"> <li>Examples: Saudi Chapter of the American College of Physicians</li> </ul>	<ul style="list-style-type: none"> <li>Play multiple vital roles including CME, raising clinical standards, diffusing innovations, networking, etc.</li> </ul>

## Appendix 2: Saudi Medical Schools

	University Name	Type	Area
1	King Saud University	Public	Middle area
2	King Abdulaziz University	Public	Western area
3	King Abdulaziz University – Rabigh	Public	Western area
4	Imam Abdulrahman Bin Faisal University	Public	Eastern area
5	King Khalid University	Public	Southern area
6	University of Hail	Public	Northern area
7	Umm Al-Qura University	Public	Western area
8	Prince Sattam Bin Abdulaziz University	Public	Middle area
9	Najran University	Public	Southern area
10	Bisha University	Public	Southern area
11	Taibah University	Public	Western area
12	Jazan University	Public	Southern area
13	University of Tabuk	Public	Northern area
14	Shaqra University	Public	Middle area
15	Taif University	Public	Western area
16	El Baha University	Public	Southern area
17	Al Jouf University	Public	Northern area
18	Majmaah University	Public	Middle area
19	King Faisal University	Public	Eastern area
20	Northern Borders University	Public	Middle area
21	King Saud bin Abdulaziz University- Riyadh	Public	Middle area
22	King Saud bin Abdulaziz University –Jeddah	Public	Western area
23	Princess Nourah Bint Abdul Rahman University	Public	Middle area
24	El Qassim University	Public	Middle area
25	El Qassim University – Unaizah College of Medicine	Public	Middle area
26	Imam Muhammad ibn Saud Islamic University	Public	Middle area
27	Alfaisal University	Private	Middle area
28	Ibn Sina Faculty	Private	Western area
29	Al Farabi faculty	Private	Middle area
30	National Colleges of Al Rajhi	Private	Middle area
31	Batterjee Medical College	Private	Western area
32	Al Maarefa College	Private	Middle area
33	Jeddah University	Public	Western area
34	Umm al – Qura University- Al Qunfudhah	Public	Western area
35	Shaqra University – El Dawadmi	Public	Middle area
36	Feekeh College for Medical Sciences	Private	Western area
37	Dar Al Uloom University	Private	Middle area



### Appendix 3: Advisory Group Members

- Lubna Alansary
- Sami Alnassar
- Nawfal Algerian
- Khalid Fouda





**The Saudi Health Council**

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Kingdom of Saudi Arabia

[www.shc.gov.sa](http://www.shc.gov.sa)