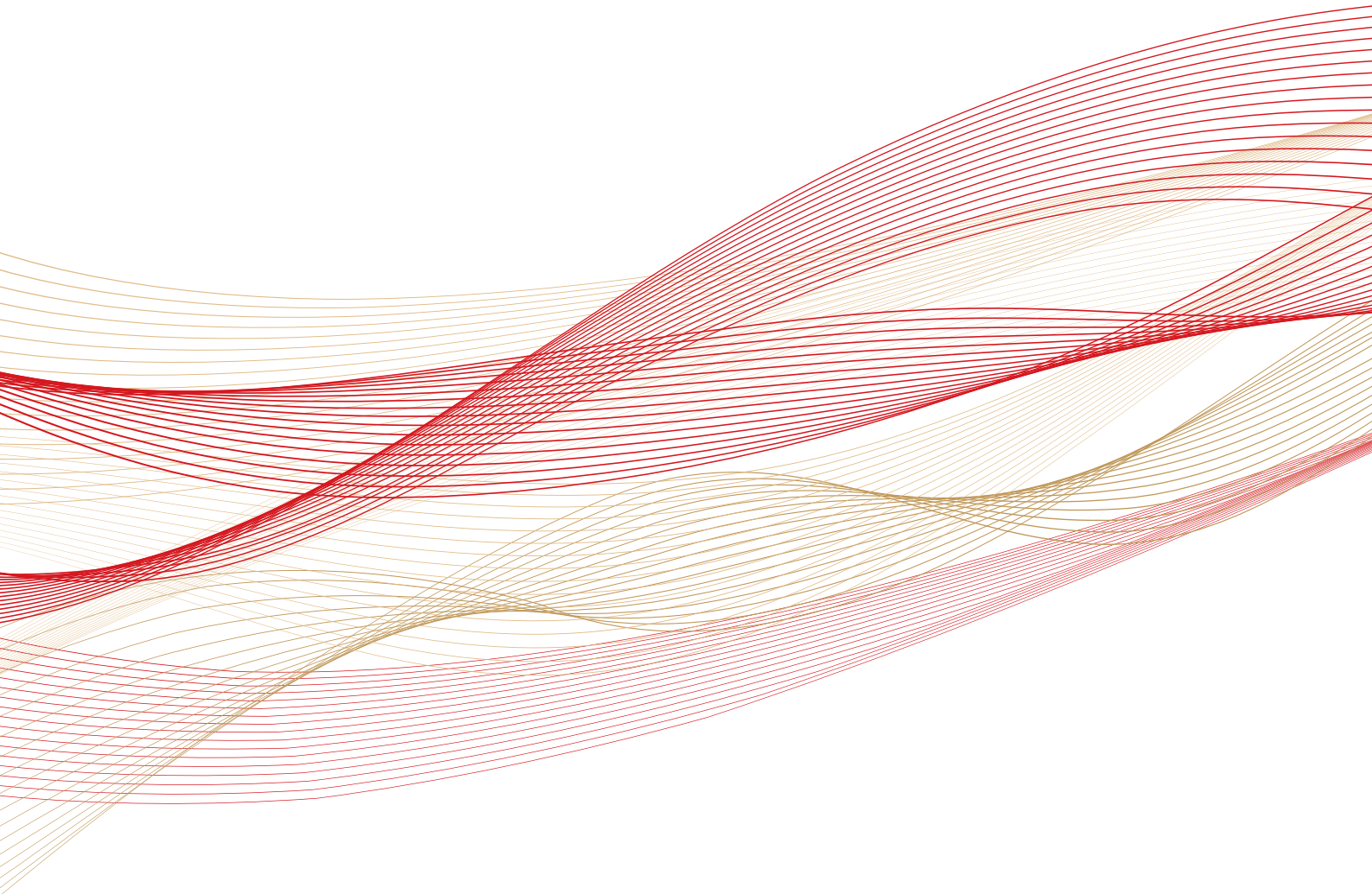




# Public Health in the United Arab Emirates and Ras Al Khaimah



## Introduction

Since independence, the discovery of oil, and the beginning of its rapid development, the United Arab Emirates has looked to developed countries as its models for public administration, including its public healthcare system. Despite being a very young country and having established its healthcare system fairly recently in history, the UAE has one of the most advanced public health systems in the Gulf region. Additionally, it has pursued an effective, progressive, and prevention-focused COVID-19 response and expanded healthcare facilities and coverage to reach a greater portion of its population. However, it also has unique national challenges and those it shares with other countries in the Gulf region. This fact sheet seeks to remedy the dearth of comprehensive resources outlining the current state and future trends of healthcare in the UAE.

## Development of the Healthcare System in the United Arab Emirates

Modern healthcare is a relatively recent development in the history of the United Arab Emirates, and many senior Emiratis remember the days when there were no formal hospitals or medical care available to UAE residents. From the early 19th century to the 1960s, when the country was a British protectorate known as the Trucial States, Britain did not invest in hospitals and schools for the local population. Thus, until a few decades ago, medical care available to most residents of what eventually became the UAE was limited to traditional cures such as herbs and cauterization<sup>1</sup>. In the 1950s, the only medical facilities available in the area were those belonging to British forces and political operatives, such as the Royal Air Force hospital in Sharjah, which were inaccessible to much of the population due to distance and transportation constraints (Al Fahim, 1995).

The first healthcare center in what is now the UAE was founded in 1943 in the Al Ras area of Dubai. Construction of Dubai's Al Maktoum Hospital also began in 1951; however, it was not completed until 1973. One of the country's first functional hospitals, Al Ain's Kanad Hospital (formerly known as the Oasis Hospital), was established by Americans Pat and Marian Kennedy at the invitation of Sheikh Zayed bin Sultan al Nahyan, ruler of Abu Dhabi and founding father of the UAE, in 1960. The hospital, which still provides care to the people of Al Ain, Abu Dhabi, nearby towns across the border in Oman, and beyond, is now a modern, state-of-the-art facility that specializes in maternity and pediatric care (Kanad Hospital website, accessed 12 Sep 2021).

The UAE government has prioritized the development of the healthcare sector since the country's founding in 1971, and emirate-level governments have made efforts to establish healthcare entities even before that. In 1970, Dubai established its Department of Health and Medical Services (DOHMS), its own emirate-level health authority and services provider. The formation of the Ministry of Health (MoH) followed soon after, in 1972. The UAE has had a national Minister of Health since the formation of its first cabinet shortly after independence in 1971. The country's health ministers up to the present are outlined in Table 1.

In 2001, the government of Abu Dhabi set up the General Authority of Health Services for the Emirate of Abu Dhabi (GAHS) to oversee all matters pertaining to public health institutions in the emirate. In 2007, as part of extensive reforms to the healthcare system of the emirate, the GAHS was restructured into the Department of Health – Abu Dhabi, previously known as the Health Authority – Abu Dhabi (HAAD), which is responsible for regulating healthcare policy in the emirate. Subsequently, the Abu Dhabi Health Services Company (SEHA), a state-owned company, which is responsible for the management and contracting of healthcare services in the emirate, was established with the support of the federal government (Al Jaber, 2016). Also, in the same year, the Dubai Health Authority was established (DHA, 2021), making Abu Dhabi and Dubai the only two emirates with their own independent entities for healthcare provision.

<sup>1</sup> From Oral Histories recorded in 2021 by the Al Qasimi Foundation. Information given by Omaid Hamad Al Zaabi and Abdulla Saeed Al Zaabi, former residents of Al Jazirah Al Hamra, Ras Al Khaimah

**Table 1:** Milestones in the development of the UAE healthcare system by decade

Decade	Major Healthcare Milestones, by Year	Minister of Health
1940s	1943: First formal healthcare center in Dubai is founded in Al Ras.	N/A
1950s	1951: Construction of Al Maktoum Hospital in Dubai begins.	N/A
1960s	1960: Al Ain's Kanad Hospital (originally known as the Oasis Hospital), one of the country's first comprehensive hospitals, is founded by American missionaries Pat and Marian Kennedy at the invitation of Sheikh Zayed bin Sultan Al Nahyan. The hospital is now a modern, state-of-the-art facility that specializes in maternity and pediatric care	N/A
1970s <small>Note: Union declared, UAE established in 1971</small>	1970: Dubai establishes its Department of Health and Medical Services (DOHMS), its own emirate-level health authority and services provider 1972: The federal Ministry of Health is founded 1973: Dubai's Department of Health and Medical Services is established	1971-1973: H.E. Sheikh Sultan bin Ahmed Al Mualla 1973-1977: H.E. Sheikh Saif bin Mohammed Al Nahyan 1977-1979: H.E. Khalfan Al Roumi
1980s		
1990s		
2000s	2001: Abu Dhabi government sets up the General Authority of Health Services for the Emirate of Abu Dhabi (GAHS) for overseeing all matters pertaining to public health institutions in the emirate 2007: GAHS is restructured into the Department of Health – Abu Dhabi, and the Abu Dhabi Health Services Company (SEHA) is established 2007: Dubai Health Authority created by Law 13 issued by H.H. Sheikh Mohammed bin Rashid Al Maktoum	1979-1990: H.E. Haman Abdul Rahman Al Midfa 1990-1997: H.E. Ahmed bin Saeed Al Badi 1997-2006: H.E. Abdul Rahman Al Midfa 2006-2009: H.E. Humaid Mohammed Obaid Al Qatami
2010s	2012: Ministry of Health (MoH) renamed Ministry of Health and Prevention (MOHAP)	2009-2011: H.E. Dr. Hanif Hassan Ali Al Qassim 2013-2019: H.E. Abdul Rahman bin Mohammad bin Nasser Al Owais
2020s		2020-present: H.E. Abdul Rahman bin Mohammad bin Nasser Al Owais

## UAE Healthcare Sector Overview

### Health Expenditures

Public healthcare in the UAE is free of charge for Emirati nationals, and resident expatriates usually receive health insurance from their employers (UAE Government, 2021). Public hospitals and health centers provide free or low-cost healthcare to UAE citizens, while expatriates pay fees or use private health insurance. Currently, private facilities outnumber public ones. As indicated by Table 2, despite being a high-income country, the UAE, like other GCC countries, spends significantly less than Western countries on healthcare both in terms of dollars per capita and percentage of GDP.

The UAE is one of the 71 countries worldwide that has passed legislation on universal health coverage (WHO, 2017). The UAE government is committed to the WHO constitution, which stipulates that “the enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition” (Constitution of the WHO, 2006), and is working towards the objective of providing an accessible and equitable health system.

### Health Insurance

Despite having what is technically a universal health plan, private insurance is the primary means of coverage for most of the UAE’s population. While the government provides free medical care and treatment to UAE nationals, limited resources and demands in standards and quality control have skewed some preference towards the private sector. Healthcare reforms undertaken by the government since the early 2000s have emphasized the use of private health insurance and healthcare in the face of a rapidly growing population and rising rates of chronic lifestyle diseases (Koorneef et al., 2017).

According to the UAE National Health Survey report for 2017-2018, 11.8% of the total population and 13.9% of non-Emirati residents had no health insurance coverage. 25.3% of the total population had government-funded health insurance, with 87.1% of Emiratis and 14.3% of non-Emirati residents having government-funded insurance, and 60.0% of the population had private insurance, with 10.4% of Emiratis and 68.8% of non-Emirati residents having private insurance (UAE NHS, 2018). Additional figures can be found in Table 3.

In 2020, the health insurance market of the UAE was worth \$6.6 billion (IMARC, 2021). National healthcare

**Table 2:** Healthcare Expenditures of Selected Western and GCC Countries (Source: World Bank data, 2018)

Country	Expenditures per Capita (2018 USD)	Expenditures as % of GDP	Per capita GDP, Nominal (current US\$)	Per capita GDP, PPP (current international \$)
United Arab Emirates	\$1,817	4.23	43,103.3	69,957.6
Qatar	\$1,716	2.49	50,805.5	89,948.6
Saudi Arabia	\$1,485	6.36	20,110.3	46,762.5
United Kingdom	\$4,315	10.00	40,284.6	44,916.2
United States	\$10,624	16.89	63,543.6	63,543.6

**Table 3:** Distribution of the members within the household according to health insurance coverage, stratified by nationality (UAE National Health Survey Report, 2018)

	Total	Emirati	Non-Emirati
<b>Denominator: Total members in the households who had health insurance coverage</b>	28,729	4340	24,389
	100.0%	100.0%	100.0%
<b>No health insurance coverage</b>	3,381	-	3,381
	11.8%	-	13.9%
<b>Government funded health insurance</b>	7,274	3,782	3,493
	25.3%	87.1%	14.3%
<b>Private health insurance</b>	17,238	451	16,787
	60.0%	10.4%	68.8%
<b>Other forms of health insurance</b>	835	107	728
	2.9%	2.5%	3.0%

expenditure grew rapidly between 2016 to 2017 from Dhs45 billion (\$12.3 billion) to Dhs57.02 billion (\$15.53 billion), an increase of 26 percent; these figures are expected to rise even further as the federal government commits to its goal of achieving universal health coverage for the population (Gulf News, 2020).

Emirates also have differing policies on employer-provided health insurance. In the emirate of Abu Dhabi, major healthcare reforms that began in 2006 made it mandatory for companies to provide medical insurance for their employees and their dependents. As of 2014, Dubai also requires companies to provide medical insurance to their employees. Both Abu Dhabi and Dubai require residents to have health insurance and impose fines of AED 500 on the employer or sponsor for each uninsured person per month. However, in the northern emirates of Ajman, Fujairah, Ras Al Khaimah, Sharjah, and Umm Al Quwain, employers are not required by law to provide health insurance to employees or their families. While MOHAP, which is responsible for healthcare provision in the northern emirates, is considering introducing mandatory health insurance in those emirates, it has not yet done so (Koornneef et al. 2017; Emirates NBD, 2019). In order to support citizens and residents that do not have access to private healthcare insurance, MOHAP introduced a series of health cards in 2013 that allows members to use medical services and healthcare facilities at government hospitals for discounted prices (MOHAP, 2021).

## Healthcare Entities in the UAE

Healthcare entities in the UAE exist at both the federal (national) and emirate level. In 1970, Dubai established its Department of Health and Medical Services (DOHMS), its own emirate-level health authority and services provider. The formation of the Ministry of Health (MoH, now known as the Ministry of Health and Prevention, or MOHAP) followed shortly after, in 1972. According to Federal Law No. (13) of 2020 on Public Health, MOHAP is responsible for developing public health-related policies and strategies, as well as planning for both prevention of illnesses and immediate response in the community; MOHAP additionally defines its role as that of regulator and supervisor of the healthcare sector (MOHAP, 2021).

By the beginning of the 2000s, decentralization of healthcare funding and decision-making had begun, with other emirate governments beginning to establish their own governing bodies for healthcare independent of MOHAP. As of 2021, there are two emirate-level independent governing bodies for healthcare: The

Department of Health – Abu Dhabi and the Dubai Health Authority. In addition, the Sharjah Health Authority was established in 2010 to “enhance, evolve, and regulate healthcare system in the Emirate of Sharjah,” and works closely with both other health authorities in the country and MOHAP (Sharjah Health Authority website, accessed 31 October 2021). Public healthcare in the smaller, northern emirates of Ajman, Fujairah, Ras Al Khaimah, Sharjah, and Umm Al Quwain, which do not have independent emirate-level public health care authorities, is supervised by MOHAP.

**Table 4:** Entities responsible for healthcare in the emirates

Emirate	Healthcare Entity
Abu Dhabi	Department of Health – Abu Dhabi; Abu Dhabi Health Services Company (SEHA)
Dubai	Dubai Health Authority
Ajman	Ministry of Health and Prevention (MOHAP)
Fujairah	
Ras Al Khaimah	
Sharjah	
Umm Al Quwain	

The public healthcare system of the Emirate of Abu Dhabi currently consists of two entities. The Department of Health – Abu Dhabi regulates the healthcare sector in the emirate, defines the health system’s strategy, and monitors and analyzes the health status of the population and healthcare system performance (DoH, 2021). The Abu Dhabi Health Services Co. (SEHA) is responsible for healthcare delivery in Abu Dhabi and owns and operates all public hospitals and clinics in the emirate. As of 2021, it oversaw 13 hospitals, 36 primary healthcare clinics, ten disease prevention and screening centers, and four dental centers and had 2,644 medical beds (SEHA, 2021).

Around the same time that the GAHS was restructured, His Highness Sheikh Mohammed bin Rashid Al Maktoum, ruler of Dubai, launched the Dubai Health Authority (DHA) with the objective of improving health care infrastructure and encouraging health care investment in Dubai. The DHA manages four hospitals, 13 primary health care centers, and numerous specialty centers that focus on genetics, thalassemia, fertility, diabetes, physiotherapy, and senior care (Dubai Health Authority, 2021).

## Healthcare Infrastructure

The number of hospitals, clinics, and available beds in the UAE is increasing steadily. As of 2017, there were 143 hospitals, 13,312 hospital beds, and 4,968 clinics and health centers in the country, an increase from 98 hospitals, 9,635 hospital beds, and 3,477 clinics and health centers in 2012 (UAE Federal Competitiveness and Statistics Centre, 2017). In accordance with the federal government's Vision 2021 National Agenda, the UAE government aims to work in collaboration with health authorities throughout the country to have all hospitals accredited according to national and international quality standards. As of 2021, the UAE is already the country with the largest number of its hospitals and medical centers accredited by Joint Commission International (JCI), a US-based company that accredits and certifies healthcare facilities around the world; 195 hospitals, medical centers, and other healthcare facilities in the country have received accreditation from JCI (JCI, 2021).

As a result of its well-developed healthcare infrastructure, the UAE has also become a hub for medical tourism from the Gulf region and around the world. The emirates of Abu Dhabi and Dubai have been especially prominent in the country's growing medical tourism industry; in 2016, 326,649 medical tourists visited Dubai, and medical tourism generated Dhs1.4 billion in that emirate alone (Omnia Health, 2020). The largest segment of visitors was those coming from Asian countries (37% of tourists), followed by Arab and GCC countries (31%) and Europe (15%). The number of medical tourists from the GCC countries especially is projected to increase in the near future, especially given the high incidence of lifestyle diseases among the populations of Gulf countries (Omnia Health, 2020).

## Healthcare Workforce

Labor supply shortage of doctors, nurses, and other healthcare workers is a problem globally; it is estimated that by the year 2030, there will be a global shortfall of 18 million healthcare workers. When it comes to the supply of doctors, nurses, and other healthcare staff, the UAE faces problems that are endemic to the GCC region, such as a healthcare workforce dominated by expatriates, a limited number of citizens who study to become healthcare professionals, and high rates of turnover among expatriate healthcare workers. The statistics on national and non-national healthcare workers in Abu Dhabi illustrate the extent to which it and other emirates rely on foreign health workers to fulfill their healthcare needs. In 2015, 89.3% of physicians, 91.2% of

dentists, 98.5% of nurses and midwives, 94.0% of allied health professionals, and 97.6% of pharmacists were non-nationals (Paulo et al., 2019). As indicated in Table 5, similar imbalances are found in all seven emirates.

**Table 5:** Medical Manpower by Emirate and Nationality in 2016

Emirate	Citizens	Non-Citizens	Total
Abu Dhabi	1,797	45,133	46,930
Dubai	1,594	39,239	40,833
Sharjah	575	8,905	9,480
Ajman	138	2,493	2,631
Umm Al Quwain	94	1,558	1,652
Ras Al Khaimah	359	3,251	3,610
Fujairah	397	1,930	2,327
<b>UAE</b>	<b>4,954</b>	<b>102,509</b>	<b>107,463</b>

Source: Open Data, mohap.gov.ae

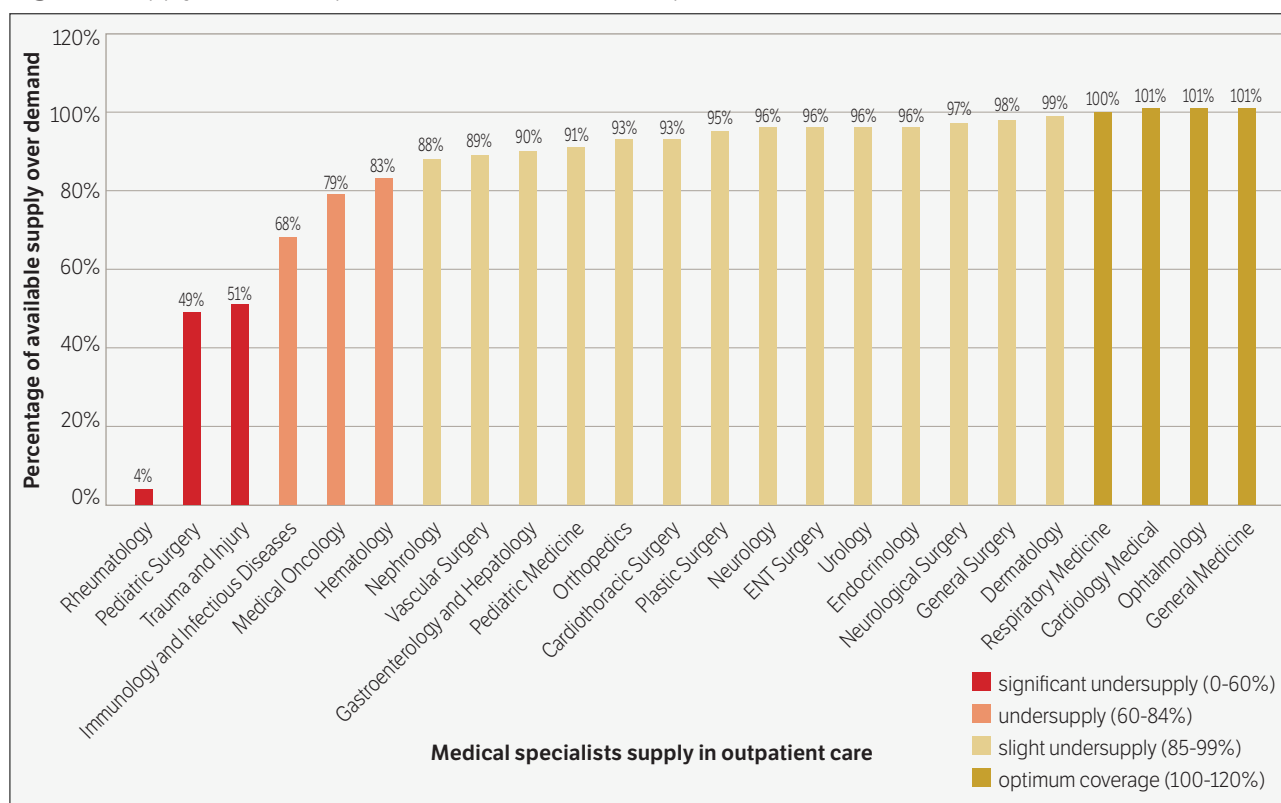
Note: Medical manpower includes doctors, dentists, pharmacists, nurses, and paramedics.

In addition, the supply of medical staff varies by medical specialization. Some specialties, such as respiratory medicine, cardiology, and ophthalmology, have optimum coverage, but there are significant shortages in rheumatology, pediatric surgery, and trauma and injury specialists and moderate shortages in several other specialties (Paulo et al., 2019). According to Dr. Kishan Pakkal, CEO of the International Modern Hospital Dubai, it is difficult to attract expat specialists, especially liver specialists, oncologists, and neurosurgeons, who are already doing well in their own countries (Oxford Business Group, 2021).

In addition, the country has suffered from a shortage of qualified nurses for a long time, a problem that has been worsened by the global COVID-19 pandemic. A 2019 forum revealed that 80% of nurses required additional qualifications to practice, urging that all seeking to be licensed by the Dubai Health Authority to practice as nurses should have a bachelor's degree in nursing from a Ministry of Education (MOE)-accredited university (University of Wollongong in Dubai, 2019). However, there have been efforts to ameliorate the shortage of nurses by UAE governmental and educational institutions. The government has begun to promote nursing education, especially for nationals, through various programs, and nursing students have been deployed to the front lines of the COVID-19 pandemic to care for patients and provide vaccinations and tests<sup>2</sup>.

<sup>2</sup> Personal communication with Dr. Gurumadhva Rao, president of Ras Al Khaimah Medical and Health Sciences University, on 26 October 2021

**Figure 1:** Supply of medical specialists for various medical specialties in the UAE (Paulo et al., 2019)



Source: The Department of Health, Abu Dhabi.

While official statistics report that there has been a steady increase in the number of hospitals, clinics, and hospital beds over the years, as it currently stands, growth in the UAE’s healthcare workforce is relatively slow and does not keep up with population growth. In 2017, the Dubai Health Authority reported that the number of doctors and nurses working in hospitals within its jurisdiction increased by 1.1% that year; however, population growth stood at 9.8% during the same timeframe, meaning that there was a net decrease in the number of physicians per inhabitant (Oxford Business Group, 2021). These shortages are worrying for healthcare experts and policymakers, especially because the population of the UAE is steadily aging, meaning that there will be even more demand for medical care and professionals in the near future. Also, supply shortages have raised concerns about whether the UAE can continue to be a regional and international healthcare tourism destination.

## Pharmaceutical and Biotechnology Companies in the United Arab Emirates and Ras Al Khaimah

There are a number of local and international pharmaceutical and biotechnology companies with operations in the United Arab Emirates. As part of the country’s ongoing efforts to diversify its economy and reduce dependence on fossil fuel revenues, the federal government has sought to incentivize pharmaceutical

production and attract multinational companies to develop and manufacture medicines in the country (Pharma Manufacturing, 2020). The UAE is a large and growing pharmaceutical producer: according to a 2019 report by IQVIA, an American healthcare data analytics company, the pharmaceutical retail and LPO market in the UAE grew 10% from the previous year and was valued at \$2.3 billion (IQVIA, 2019).

Multinational corporations with operations in the UAE dominate the country’s pharmaceutical industry: they make up 79% of pharmaceutical sales in the UAE. As of 2019, Switzerland-based Novartis, UK-based GlaxoSmithKline, and British-Swedish AstraZeneca are the top three pharmaceutical corporations with operations in the UAE and occupy around 20% of sales (IQVIA, 2019).

With regards to local pharmaceutical companies, Ras Al Khaimah is home to Julphar Gulf Pharmaceutical Industries, ranked in 2018 as the number one pharmaceutical manufacturer in the UAE and one of the largest pharmaceutical manufacturers in the Middle East. A local company founded in 1980 under the guidance of His Highness Sheikh Saqr bin Mohammed Al Qasimi, Julphar exports pharmaceutical products internationally to more than 50 countries. The company is known for being the only manufacturer of insulin in the UAE and is one of the largest manufacturers of insulin in the world.

**Table 6:** Local Pharmaceutical Companies in the UAE

Company Name	Headquarters	Area of operation
Julphar Gulf Pharmaceutical Industries	Ras Al Khaimah	Global, largest pharmaceutical manufacturer in the Middle East and Africa
Medpharma	Sharjah	UAE
Pharmax	Dubai	MENA Region
Neopharma	Abu Dhabi	UK, Canada, USA, Brazil, India, Japan, Russia, and UAE
Globalpharma	Dubai	MENA Region
Al Hayat Pharmaceuticals	Sharjah	UAE
The Modern Pharmaceutical Company (MPC)	Dubai	UAE
LIFEPharma	Dubai	Global, operations in most continents

The company's other leading products include its Moist Exposure Burn Ointment (MEBO), a common treatment for burns, and MEBO Scar, which was developed by the company as a treatment for old and new scars and is used to restore the health of traumatized skin (Julphar, 2021). As of 2021, Julphar also produces the COVID-19 vaccine Hayat-Vax, the first COVID vaccine manufactured in the Arab world, which was developed in a joint collaboration between Sinopharm CNBG and Abu Dhabi-based G42. The company's Ras Al Khaimah-based facility has an output of approximately 2 million doses per month (MobiHealthNews, 2021).

Despite the presence of the headquarters of several multinational pharmaceutical companies in the UAE, as well as a few home-grown companies (see Table 6), their number is few compared to other high-income countries, and they are focused less on research and development than on production. According to S. Gurumadhva Rao, president of the Ras Al Khaimah Medical and Health Sciences University, this lack of research organizations disincentivizes students in the country from pursuing pharmaceutical education and careers, as many who graduate from such programs are employed in commercial pharmacies where salaries are often low and there are few opportunities for career advancement<sup>3</sup>.

## Healthcare Workforce Development in the UAE

Several public and private universities in the United Arab Emirates, including United Arab Emirates University (UAEU), Khalifa University, and the University of Sharjah, offer degrees in medical fields. In addition, three universities – Dubai's Mohammed bin Rashid University of Medicine and Health Sciences (MBRU), Ajman's Gulf Medical University, and Ras Al Khaimah Medical &

Health Sciences University (RAKMHSU) – are dedicated medical universities focused exclusively on training doctors, surgeons, dentists, nurses, pharmacists, and other medical professionals. Medical universities and faculties of medicine in comprehensive universities receive accreditation from the Commission of Academic Accreditation (CAA), the UAE Federal Government Quality Assurance Agency for Higher Education.

A major area of concern for the future of medical education in the UAE is the number of Emirati national students graduating with medical degrees and continuing to pursue careers in the healthcare sector. This is an especially pressing issue for female students. As is the case throughout the Gulf region, Emirati women have lower workforce participation rates despite being more highly educated than men on average (Ridge, 2014). As indicated in the table below, far more non-national students graduate from RAKMHSU than do Emiratis, a common trend throughout the country's universities. In addition, far more women pursue medical education at RAKMHSU than men, and Emirati students are far less likely to be studying to become doctors than are expatriate students; most Emirati students at the university pursue nursing degrees.

## Awareness of Health and Safety Issues

Campaigns for awareness of occupational health and safety issues are spearheaded by the Ministry of Human Resources and Emiratisation (MOHRE), and the Ministry's strategy is based on the UAE Vision 2021. MOHRE has several programs that spread awareness on health and safety issues, especially occupational health and safety. For example, it conducts field visits to housing units and workplaces, especially construction sites, workshops, and factories.

<sup>3</sup> Personal communication with Dr. Gurumadhva Rao, president of Ras Al Khaimah Medical and Health Sciences University, on 26 October 2021

**Table 7:** Breakdown of graduated RAKMHSU students by degree program, gender, and nationality

Degree Programs		Graduated Students					
		# Emirati Students Graduated			Total # Students Graduated		
		Sub-Total	Male	Female	All	Male	Female
Bachelor Programs	RN-Nursing	18	-	18	36	1	35
	Nursing	11	5	6	14	5	9
	Dental Science	4	-	4	56	23	33
	Medicine	2	1	1	85	33	52
	Pharmacy	2	-	2	15	4	11
Master Programs	Nursing	0	-	-	0	-	-
	Pharmacy	0	-	-	0	-	-
<b>TOTAL</b>		<b>37</b>	<b>6</b>	<b>31</b>	<b>206</b>	<b>66</b>	<b>140</b>

Source: RAKMHSU

Awareness of health and safety, especially in the workplace, is also spread by the Institution of Occupational Safety and Health (IOSH), which has a presence in several Middle Eastern counties and campaigns with schools and universities. Emirate-level health authorities also provide awareness on health- and safety-related issues (Barbour, 2019).

## The Health Sector in Ras Al Khaimah

In recent decades, the economy of Ras Al Khaimah has grown rapidly, and the health care system is catching up. Much like the rest of the UAE, Ras Al Khaimah is quickly becoming a regional hub for medical and cosmetic treatment due to its scenic location, short waiting times, competitive pricing, and high-quality healthcare. During this time period, Ras Al Khaimah has seen the establishment of several new healthcare facilities, including RAK Hospital, a multi-specialty, state-of-the-art private hospital established in 2007. This, as well as the establishment of Sheikh Khalifa Specialty Hospital (SKSH) and the ongoing expansion of the Ras Al Khaimah Medical and Health Sciences University (RAKMHSU) and Ras Al Khaimah Free Trade Zone, have contributed to the influx of medical tourists from other emirates and beyond, making Ras Al Khaimah a lucrative medical tourism destination.

Unlike Dubai and Abu Dhabi, which have independent administering public health care, Ras Al Khaimah's public health care system falls under the management of the federal Ministry of Health and Prevention (MOHAP). There are eight government hospitals and 33 private hospitals and medical centers in Ras Al Khaimah (Government of Ras Al Khaimah, 2020). In addition to this, in 2016, small mobile medical units were provided by MOHAP to the emirates of Ras Al Khaimah and Fujairah to cater to patients, especially the elderly, in remote areas (MOHAP, 2016). Government hospitals in the emirate are open to citizens and holders of government health cards; non-cardholders can use them for emergencies only. Government hospital services are offered free of charge to Emirati citizens with government-issued health cards, while expatriate residents are charged nominal, subsidized rates for consultations and treatments.

Recent years have seen additions and expansions of RAK Hospital, which strives to keep up with growing healthcare demands in the emirate, the broader UAE, and the Gulf region (RAK Hospital Website, accessed September 7, 2021). Currently, all major medical specialties—including cardiology, psychology, gastroenterology, internal medicine, dermatology, neurology, pediatrics, podiatry, neurology, surgery, and obstetrics and gynecology—are represented, and the hospital has contributed to the fulfillment of Citizens and

<sup>4</sup> Personal communication with Dr. Jean Marc Gauer, CEO and Head of Surgery at RAK Hospital, on November 4th, 2021

expatriates alike choose RAK Hospital for the healthcare needs in the emirate, and its facilities are usually at capacity; thus, the hospital is currently planning a major expansion from 65 to 200 beds in order to better serve the population of the emirate<sup>4</sup>.

The Ras Al Khaimah Medical and Health Sciences University (RAKMHSU) is the first comprehensive medical university in the UAE and was established under the guidance of His Highness Sheikh Saud bin Saqr Al Qasimi, ruler of Ras Al Khaimah, in 2006. It currently offers Bachelor's degrees in medicine and surgery (MBBS), dental surgery (BDS), pharmacy (B. Pharm), and nursing (BSN), as well as masters' degrees in nursing and clinical pharmacy (RAKMHSU, 2021).

## Key Health Challenges in the UAE

Since the country's independence in 1971 and subsequent economic boom fueled by fossil fuel exports, the UAE has seen a significant shift away from traditional eating habits, increased dependence on technology, and more sedentary lifestyles. This has had wide-ranging health implications in the country, with diabetes, cardiovascular diseases, and cancers increasing in prevalence due to lifestyle shifts (Alnakhi et al., 2021).

According to the Institute for Health Metrics and Evaluation (IHME), the leading causes of death in the UAE in 2019 were, in order of prevalence:

- 1. Ischemic heart disease** (otherwise known as coronary artery disease, coronary heart disease, or simply heart disease): Rates of ischemic heart disease are high in the UAE, and risk factors such as obesity, insufficient physical activity, and unhealthy diets are prevalent among the population.
- 2. Road injuries:** While the federal government is committed to decreasing the number of road traffic-related deaths and has included this goal in the National Strategy 2021, rates of traffic deaths remain high (UAE Government, 2021).
- 3. Stroke:** Strokes are very prevalent in the UAE and are the second leading cause of disability after road accidents (Emirates News Agency, 2020).
- 4. Chronic kidney disease:** High rates of chronic kidney disease in the UAE are correlated with high rates of other conditions that are risk factors for kidney diseases, such as hypertension and type II diabetes mellitus (Khaleej Times, 2017; Al-Shamsi et al., 2018).
- 5. Diabetes:** The UAE has one of the highest rates of diabetes in the world, with nearly one in five residents

suffering from the condition. Experts have identified excessive consumption of sugary foods and sedentary lifestyles as contributing factors to the prevalence of the condition in the UAE. This has become especially concerning during the past two years, as it is a COVID-19 comorbidity; among reported COVID-19 deaths, at least 40% were diabetics (Gulf News, 2021).

### **6. COPD (chronic obstructive pulmonary disease):**

Different studies give widely varying rates of COPD among the population of the UAE, ranging from 3.7% to 12.9%; however, what is certain is that one of the primary contributing factors to COPD is tobacco smoking, and high rates of cigarette use and the use of traditional tobacco products such as dokha contribute to high rates of COPD in the country (Alzaabi et al., 2019).

**7. Hypertensive heart disease:** The rate of hypertension in the UAE currently stands at around 15%, and hypertension is responsible for 45% of cardiovascular deaths and 51% of strokes (MOHAP, 2016).

**8. Drug use disorders:** Deaths from substance misuse and addiction are on the rise in the UAE, and the problem is exacerbated by societal stigmas surrounding drug addiction and rehabilitation (AlAmeri, 2018).

**9. Pancreatic cancer:** Risk factors include tobacco use, being overweight or obese, and having diabetes (American Cancer Society, 2020), all of which are common in the UAE and contribute to its high incidence of pancreatic cancer.

**10. Self-harm:** While official statistics are not kept, doctors have anecdotally reported seeing an increase in incidences of self-harming behaviors among youths in the UAE. Concerns have also been raised regarding the normalization of such behaviors through websites and blogs (The National News, 2017).

Experts predict an increase in the demand for services in these areas in the coming years, and burdens are already high; for example, one in five UAE residents has diabetes, constituting a health crisis that experts have said is more dangerous for the country than the COVID-19 pandemic (Gulf News, 2021). However, this demand could be controlled by curbing underlying risk factors such as tobacco consumption, unhealthy diet, and inadequate physical activity. Changing the attitudes toward healthy lifestyles among the local population is, thus, a high strategic priority for the emirates; various government bodies are investing in a number of campaigns aimed at spreading awareness about the importance of exercise and healthy diet.

**Table 8:** Number and percentages of new cancer cases in the UAE in 2020, both sexes, all ages (WHO International Agency for Research on Cancer, from the Global Cancer Observatory, 2021)

Cancer Type	Number	Percentage of Total
Breast	1,030	21.4%
Colorectum	510	10.6%
Thyroid	405	8.4%
Leukemia	272	5.7%
Prostate	270	5.6%
Other Cancers	2,320	48.3%

**Table 9:** Cancer Screening Recommendations by Age, Sex, and Frequency

Cancer Type	Primary Population Group		Screening Test and Frequency
	Gender	Age	
Colon and Rectum Cancer	Male and female	40-75 years	Colonoscopy every 10 years or stool test annually
Breast Cancer	Female	40+ years	Mammogram every 2 years
Cervical Cancer	Female	25-29 years	Pap test every 3 years
		30-65 years	Pap and HPV as a co-test every 5 years
Lung Cancer	Male and female	55-75 years	Low dose CT scan annually

## Cancer

An estimated 19.2 million new cancer cases were diagnosed worldwide in 2020, and cancer trends in the UAE closely follow global trends. This makes the disease a high priority for the UAE Healthcare system. Cancer in various forms caused 12% of all deaths in the UAE in 2018 and was the third most common contributing factor to premature death among the population (WHO, 2018). Much like other non-communicable diseases affecting UAE residents, cancers are at least partially caused by lifestyle factors, especially obesity and smoking. There is consistent evidence that ovarian, endometrial, breast, and renal cancers are linked to obesity and that smoking can cause cancer almost anywhere in the body (CDC, 2020). The most prevalent cancers that affect UAE residents are outlined in Table 8; however, low screening levels may contribute to an incomplete record of cases.

Breast cancer is the most common form of cancer among the female demographic, comprising 38.8% of new cases among women in 2020, while colorectal and prostate cancers were the most common amongst the male demographic, comprising 14.5% and 12.5% of the new cases, respectively.

The UAE has made considerable efforts to promote early cancer detection. In 2017, DHA established the BASMAH initiative, the basic health plan under the Dubai Mandatory Health Insurance Scheme, which will cover screening and the treatment of breast, colorectal, and cervical cancer. Moreover, official cancer screening

initiatives have also been launched by various health authorities in the UAE to raise awareness about cancer and stress the importance of early detection. For example, the Department of Health – Abu Dhabi recommends that citizens undergo screening regularly for various types of cancers (Department of Health – Abu Dhabi, 2021).

## Communicable Diseases

Given the high immigration of expatriate workers to the UAE and the influx of tourists from all over the world, communicable diseases remain an important area for public health in the UAE. The federal government develops strategies for combatting infectious diseases and providing vaccinations for the population and has initiated various health programs to combat and prevent communicable and contagious diseases, including polio, malaria, viral hepatitis, HIV/AIDS, and tuberculosis (UAE Government website, 2021).

In 2014, the UAE government passed Federal Law No. 14 of 2014 on Combatting Communicable Diseases, setting procedures for protecting the populace from such diseases. Following the outbreak of the COVID-19 pandemic, MOHAP amended the law, adding COVID-19 to its list of communicable diseases (UAE Gov. website, 2021). Among other provisions, the law imposes penalties for concealing that one has tested positive for COVID-19 and failing to show up for tests or treatment despite knowing that one is infected. It also includes penalties for doctors, pharmacists, and other medical professionals for failing to inform the relevant authorities

that a patient is suffering from or has died from a communicable disease, including COVID-19 (Emirates News Agency, 2020).

In September 2020, the UAE Cabinet approved a National Policy on Vaccinations. This is a multi-sectoral framework aimed at combatting communicable diseases and reducing their risk to individuals and society (UAE Government, 2021). It also aims to:

1. Coordinate all parties involved in the immunization field and enhance the efficiency of services;
2. Bring together the non-governmental sector and community members to support the UAE's fight against communicable diseases by promoting a healthy lifestyle;
3. Ensure the delivery of the best quality of vaccination services and preventive care nationwide;
4. Make vaccines widely available, ensure their sustainability and quality, raise awareness of their importance, and support innovation and research in the field;
5. Enhance the country's position as a regional and international healthcare hub, in light of its development of a comprehensive and sustainable health system, by ensuring the provision of the best quality immunization services in compliance with international safety practices.

## COVID-19

Like all countries around the globe, the UAE has also been affected by the COVID-19 pandemic. As of December 26, 2021, the country has had approximately 750,000 COVID-19 cases and 2,157 COVID-19-related deaths (Our World in Data, 2021).

COVID-19 has exacerbated some of the preexisting health issues in the UAE. For example, as a result of lockdowns, childhood obesity has worsened in the country: a MOHAP study of 27,754 parents indicates that students are 46% less active than before the pandemic, that they spend more time on electronic devices, and that the obesity rate among young people has increased. Also, nearly half of the young Emiratis polled indicated that their mental health had worsened as a result of the pandemic and lockdown (The National News, 2021).

Despite these challenges and losses, since the early days of the pandemic, the UAE has been a regional and world leader in providing a progressive, swift, and effective response against COVID-19. Since March 2020, the UAE federal government has taken measures

to stop the spread of the novel Coronavirus (COVID-19). These measures apply to citizens, non-citizen residents, and tourists and travelers to the UAE, and include mandatory PCR testing for international travelers to the UAE, restrictions on travel from certain countries, and restrictions preventing people from entering certain public places or traveling between certain emirates if they are not vaccinated or do not have a negative PCR test (UAE Embassy, 2021).

While vaccination is not required of UAE residents by the federal government, as of September 19, 2021, the country has the highest rate of COVID-19 vaccination in the world, with 93.0% of the population having received at least one dose and 82.1% being fully vaccinated (Our World in Data, 2021).

The UAE government has a comprehensive list of post-COVID-19 recovery plans and initiatives; among these is the formation of a "National COVID-19 Crisis Recovery Management and Governance Committee," which will lead the country's economic recovery post-pandemic. In meetings held in May 2020, the government discussed strategies for post-COVID recovery in six primary areas: health, education, economy, food security, society, and government (UAE Government Portal, 2021).

While the vaccination is not mandated for UAE residents by the federal government, federal government employees will be required to be vaccinated and receive booster shots in 2022 (Gulf News, 2022). Also, international travel will be restricted for unvaccinated Emirati citizens after January 10th, 2022 (MOFAIC, 2022). As of January 9th, 2022, the country has the highest rate of COVID-19 vaccination in the world, with 100.0% of the population having received at least one dose, 92.6% being fully vaccinated, and 38.4% of the population having been given booster shots (Our World in Data, 2022).

## Injuries and Occupational Health and Safety

Injuries are a leading cause of mortality in the United Arab Emirates, with 15.81% of total deaths in 2019 being attributable to injuries, compared to a global figure of 7.96% in the same year (World Bank, 2019). However, this figure has decreased in the past decade, from 25.85% in 2010.

Traffic accidents account for a large but decreasing proportion of injuries. According to a study by Loney (2013), traffic-related injuries have consistently been the predominant cause of injury-related death, causing nearly 70% of all accidental deaths between the years

2000 and 2008. However, like deaths from injuries in general, deaths caused by traffic injuries have decreased significantly in the past decade. In 2003, the rate of mortality caused by road traffic injury was 24.2 per 100,000 population; however, by 2019, that number had decreased to 8.9 (World Bank data, 2019).

The UAE Federal Labor Law is the primary legislation that lays out occupational safety and labor law in the country and lays out general duties for employers to ensure the health and safety of their workers. It applies to all workplaces, employers, and employees, including UAE citizens, expats, and migrant workers. However, much like the healthcare system, individual emirates also have their own legislative frameworks for controlling occupational health and safety within their jurisdictions. For example, Dubai has additional regulations for specific occupational health and safety issues, and Dubai Municipality can impose fines and other penalties on any business not adhering to these regulations (Barbour, 2019). The government also penalizes workplaces if they do not report work-related injuries, deaths, or diseases. The penalty can range from a fine of Dhs10,000 for each case not reported to the closure of the facility (UAE Ministry of Human Resources and Emiratization, 2021).

In 2016, the Ministry of Health and Prevention held the first meeting of its Committee on promoting safety and occupational health for facilities workers. The meeting, which was attended by representatives from several government bodies including the Ministry of Health, the Federal Authority for Human Resources, and emirate-level health departments including those of Abu Dhabi, Dubai, and Sharjah, sought to promote and implement a comprehensive occupational health and safety policy and establish proper standards for assessing occupational health and safety, among other goals (MOHAP, 2016).

## Mental Health

Demand for mental health care in the UAE is high, and it has risen during the time of the COVID-19 pandemic (Khaleej Times, 2021). According to a study conducted in 2019 in the city of Sharjah, 57.2% of participants suffered from at least one mental disorder; the most common, in order of prevalence, were anxiety, at 56.4%; depression, at 31.5%; PTSD, at 15.1%; phobic disorder, at 10.8%; and personality disorder, at 6.4% (Mahmoud and Saravanan, 2020).

Experts have characterized the field of psychology in the UAE as being in its initial stages. According to a 2015 report on the state of psychology and mental health care

services in the UAE, there were 0.3 psychiatrists, 0.51 psychologists, 0.25 social workers, 0.04 occupational therapists, and 0.04 other mental health care workers per 100,000 population, numbers which have been described as an “extreme shortage” of mental health professionals and facilities in the country (Al-Darmaki and Yaaqeib, 2015).

When it comes to barriers towards seeking professional health for mental health-related problems in the UAE, a study conducted in 2020 identified three most significant barriers: thinking the disease will go away by itself (60.1%), feeling shamed (58.9%), and thinking they don't have a problem (54.5%). A high number of respondents believed that the low accessibility and high cost of seeking professional help was also a significant barrier (Ibrahim et al., 2020).

The Arab Youth Survey 2019, which explored attitudes among Arab youth in 15 countries and territories in MENA, found that one-third of them knew someone who had a mental disorder such as anxiety and depression. 54% of the respondents across the MENA region believed that quality mental health care is difficult to access, and there were stereotypes and stigma associated with seeking medical care. However, Arab youths in the Gulf/GCC reported that they had a much easier time accessing quality mental health care in their countries than did youths in other Arab countries; 67% of Gulf respondents said it was easy to access quality mental health care. Youths in the GCC were also more likely to be accepting of mental health issues than those in the Levant or North Africa, with 62% saying they believed mental health issues were a normal thing, compared to 33% in North Africa and 50% in the Levant (11th Annual ASDA'A BCW Arab Youth Survey, 2019).

A 2021 study conducted among health-care professionals in Ras Al Khaimah revealed high rates of negative attitudes towards mental illnesses, contributing to a great degree of stigma. Stereotypes of the mental health profession and professionals include 30% of respondents believing that the field is unprofessional, unscientific, ineffectual, and of low prestige, and mental health professionals not being considered equal to a real health/social care professional. Other unfavorable attitudes included: perceived dangerousness of people with mental health problems (4.4%), suspicion over recovery of people with mental health problems (20.4%), and personal disclosure of mental health problems to colleagues and friends (59.3%). These unfavorable attitudes have serious implications for the ability of medical professionals to be empathetic and responsive

towards patients with mental illnesses, which might result in higher rates of stigma, poor doctor-patient relationships, and reduced quality of care (Salama et al., 2021).

In 2019, MOHAP announced the launch of various digital solutions technologies in the mental and psychological field, which will lead to significant improvements in the clinical practices field. These digital solutions include revolutionary treatment that uses virtual reality technology to help understand schizophrenia and treat psychotic patients, victims of bullying, and youth with OCD. An innovative program of Cognitive Behavioral Therapy (CBT) was also introduced to boost students' capability at primary schools (MOHAP, 2019). Also, the UAE Government's National Strategy for Wellbeing 2031 identifies strategic objectives for promoting good mental health and positive thinking, supporting health goals laid out in the Vision 2021 and UAE Centennial 2071 national agendas (UAE Government, 2021).

## Non-Communicable Diseases

Poor lifestyle habits such as unhealthy diet, low physical activity, and smoking lead to a number of chronic and often life-threatening non-communicable medical conditions, including obesity, diabetes, and lung diseases, all of which are linked to increased risk of developing cardiovascular diseases (CVDs), which are the world's leading cause of premature death, as well as diabetes and respiratory conditions.

### Cardiovascular Diseases

Cardiovascular diseases (CVDs) are a group of several disorders affecting the heart and blood vessels and, by extension, may affect the brain, kidneys, lungs, or other organs. More people die annually from CVDs than from any other cause; it is estimated that 17.9 million people died from cardiovascular diseases in 2019, and 32% of all deaths worldwide can be attributed to cardiovascular conditions (WHO, 2021). However, CVDs are highly treatable and preventable, with some estimates indicating that 90% of CVD can be prevented by lifestyle changes such as eating a healthy diet, exercising, and avoiding alcohol and tobacco, coupled with early detection and treatment of risk factors such as high blood pressure (O'Donnell et al., 2016; Cleveland Clinic 2021).

Despite its predominantly young population, the UAE has one of the highest age-standardized death rates caused by cardiovascular disease in the world; while around 32% of worldwide deaths are attributable to cardiovascular disease, in the UAE this number is 40% (Oulhaj et al., 2020).

Much of this high rate of CVD is attributable to risk factors such as abdominal obesity, dyslipidemia (abnormal levels of cholesterol and other lipids in the blood), hypertension, and diabetes (Oulhaj, 2020).

In a 2019 survey conducted by The Cleveland Clinic Abu Dhabi, 71% of UAE residents reported having at least one risk factor for heart disease, and a significant number reported more than one factor. 23% reported having high blood pressure, 15% reported having diabetes, and 21% reported being obese. When asked about their lifestyle, which has a significant impact on the occurrence of heart disease, 35% of respondents said that they don't get enough exercise, and 32% said that they suffered from high stress. Women also reported higher rates of obesity (24%), high blood pressure (24%), stress (40%), and lack of exercise (42%) (Cleveland Clinic Abu Dhabi, 2019).

Reducing cardiovascular disease-related mortality is a top priority within the health theme of the National Agenda 2021, which has established reducing cardiovascular disease-related mortality by 25% as one of the key performance indicators (Vision 2021, 2021).

### Diabetes

Diabetes mellitus is one of the leading global causes of morbidity and mortality and is often linked to obesity. According to the International Diabetes Federation (IDF), in 2020, more than 55 million adults in the MENA region were reported to have diabetes. The MENA region also has the highest age-adjusted diabetes prevalence (12.5%), and in 2020, the UAE was reported to have an adult diabetes prevalence of 15.4% (IDF, 2020).

The Dubai Health Authority, in collaboration with the Dubai Statistics Center, conducted the Dubai Household Health Survey in 2017 to assess the prevalence of diabetes, pre-diabetes, and some risk factors among the adult population of Dubai. The overall prevalence of diabetes in Dubai was 15.2%. The highest prevalence was observed among UAE nationals, where diabetes was 19% and pre-diabetes was 18.6%. The survey also identified four main risk factors – smoking, hypertension, obesity, and physical inactivity – that explain the high rates of diabetes in UAE nationals and expats. Other factors such as increasing age, being male, hypertension, high BMI, low or no education, and positive family history of the disease were linked to diabetes. Currently, around 10% of diabetes cases in the UAE remain undiagnosed, with a large majority of this group being expats, perhaps due to the limited access to free or affordable healthcare when compared to UAE nationals.

<sup>5</sup> An individual is considered overweight if his or her BMI is greater than or equal to 25 kg/m<sup>2</sup>. An individual is considered obese if his or her BMI is greater than or equal to 30 kg/m<sup>2</sup>.

As a result, MOHAP in collaboration with Johnson & Johnson announced the launch of a Diabetes Screening and Professional Healthcare Education program in 2016, which was designed to provide better medical care to diabetic patients. The key objectives of the program include screening of 10,000 high-risk individuals and training 90 nurses based on the Johnson and Johnson Diabetes Institute (JJDI) curriculum. Furthermore, 25 doctors will attend the globally recognized JJDI program. The diabetes screening and education initiative will address important areas of diabetes management such as maintaining healthy lifestyle for diabetes prevention, increasing rate of diagnosis and early detection, and improved care with self-management programs. This program has proven to be successful, as a report published by MOHAP in 2021 reports the prevalence of diabetes as 11.81% of the total population.

## Genetic Diseases

The UAE has high rates of genetic disorders, the most common being blood disorders such as thalassemia (with at least 8.5% of the population having thalassemia or carrying the gene), sickle cell, anemia, hemophilia, and G6PD deficiency (Gulf News, 2018).

Several institutions provide treatment and conduct research on genetic disorders and their prevention in the UAE. These include the Centre for Arab Genomic Studies (CAGS), the Dubai Genetics Center (DGC) at the Dubai Health Authority, and the Center for Genomic Discovery at the Mohammed bin Rashid University of Medicine and Health Sciences. In addition, for residents and citizens who wish to get married in the UAE, it is now mandatory to get a pre-marriage mutual check in order to prevent further cases of genetic disorders resulting from marriages between close relatives (UAE Government Portal, 2021).

## Obesity

The United Arab Emirates ranks as the 20th most obese nation in the world, and much like its neighbors in the other GCC countries, there are several factors that make obesity a serious health issue in the UAE. As in other

countries in the region, the rapid increase in obesity rates in recent decades is associated with rapid urbanization, economic development, the influx of the expatriate workforce, a decrease in physical activity, and an increased caloric intake from calorie-dense, processed, and prepackaged meals (Radwan et al., 2018). Another factor contributing to a high rate of obesity in the country is a lack of a strong culture of physical activity in the region, potentially due to climate. For women, social norms and lack of physical facilities may be contributing factors to low levels of physical activity (Sulaiman et al., 2017).

In a national survey conducted by MOHAP in 2018, approximately 67.9% of the population was overweight, and 27.8% was obese. Women had a higher rate of obesity than men, with 30.6% of women being obese compared to 25.1% of men. However, a higher percentage of men were overweight than women, with 70.8% of men and 64.9% of women being overweight (MOHAP, 2018).

In the same survey, around 70.8% of the UAE population were reported to have insufficient physical activity; gender differences in physical inactivity have consistently been observed in Arab countries, with the prevalence of inactivity being higher among women. While previous studies have alluded to traditional religious norms defining acceptable behaviors for women, which might not include exercising, detailed qualitative research conducted among female Emirati university students reveals various other barriers towards physical activity. The most significant barrier was the sociocultural norms for women and the lack of women-only facilities near their homes. Some women indicated that there was a lack of awareness of the range of benefits of physical activity for women within their culture, other than weight loss. Other barriers include low family support, competing time demands due to domestic or academic responsibilities, and discomfort associated with hot weather. In contrast, commonly cited enablers included social support from friends and family, availability of low-cost women-only facilities and opportunities close to their homes, and organized physical activity sessions integrated within their academic schedule. (MOHAP, 2018).

**Table 10:** National Survey Results, 2017-2018

	Emirati		Non-Emirati	
	Male	Female	Male	Female
Lack of Exercise	74.9%	86.9%	65.6%	72.9%
Sufficient Exercise	25.1%	13.1%	34.4%	27.1%

Childhood obesity is also a widespread and pressing health challenge in the UAE, with the rate of obese and extremely obese children steadily rising. A 2016 study by AlBlooshi et al., which examined rates of obese and overweight children in a large cohort of students in government schools in Ras Al Khaimah, found that each year an additional 2.36% of students were obese and an additional 0.28% were extremely obese. Surprisingly, the rate of boys classified as extremely obese was nearly ten times that of the rate of girls (AlBlooshi et al., 2016). However, MOHAP's WHO-approved survey in 2017-2018 gave national health leaders reason to be optimistic about the future of obesity-related health problems in the UAE. The survey data, which became public in 2019, indicated that, at 27.8%, the country's adult obesity rate had gone down from the 2010 figure of 37.2% (MOHAP, 2019).

In 2016, MOHAP launched the Health Heroes interactive smart application, which provides health information to children and helps them lead healthier lifestyles. The application educates children through various games that encourage them to make healthier choices when shopping for food, maintain good hygiene to prevent disease, and exercise regularly. This initiative was a part of the National Strategy to bring down childhood obesity rates and promote preventive health behavior among children in the UAE.

In 2021, MOHAP introduced a public outreach campaign titled "Together We Move" aimed at promoting physical activity among women of all ages. The campaign is designed to equip women with the necessary skills and knowledge to lead healthy lifestyles that protect them from various diseases and enhance their mental wellbeing. It includes direct interviews with social media influencers, awareness-raising videos and posters, outdoor and indoor mall advertisements, and mobile vehicle advertisements. (Emirates News Agency, 2021).

## Respiratory Conditions

Rates of respiratory ailments such as asthma are high among the UAE population, with an estimated 14% suffering from such conditions (Euronews, 2020).

Tobacco consumption is a major contributor to increasing rates of respiratory ailments in the UAE. In a government survey conducted in 2021, 15.67% of the male population and 2.404% of the female population in the UAE reported smoking a tobacco product. However, different sources report very different rates of tobacco smoking. A study by Abdul Razzak et al. published in the *Oman Medical*

*Journal* in 2020 estimated a smoking rate of 23.4%-24.7% among men and 0.8% among women (Abdul Razzak et al., 2020). A Cleveland Clinic Abu Dhabi-commissioned survey that set out to measure heart disease prevalence and risk factors in the UAE population found that 39% of respondents said they were smokers (Cleveland Clinic Abu Dhabi, 2021).

Traditional, non-cigarette forms of tobacco smoking are also common in the UAE. Water pipe (shisha or hookah) smoking is a popular pastime among both males and females across the UAE, especially the young population. A study found high rates of hookah smoking among young adults in the UAE, identifying peer influence and academic stress as the causes. During the average shisha smoking session, the smoker inhales chemicals equivalent to consuming 100 or more cigarettes, putting themselves and second-hand smokers at a high risk of developing chronic conditions such as lung cancer. However, in the aforementioned study, only half of the participants had knowledge about the harmful effects of shisha smoking when compared to cigarettes. Moreover, more than half of the participants in the study were regular shisha smokers, with a majority having smoked for three years or longer. A growing social acceptance of female shisha smokers was also observed; female Emirati students reported higher rates of shisha smoking (34%) when compared to cigarettes (14.7%). In addition, many UAE residents, particularly youths, smoke dokha<sup>6</sup>; the traditional tobacco product has a higher nicotine concentration than ordinary cigarette tobacco, and users were found to be 5.25 times more likely to be at risk of cardiovascular diseases (Gulf News, 2019).

UAE Federal Law No. 15 of 2009 Regarding Tobacco Control bans the promotion and public advertising of tobacco products, smoking in public transport, public buildings, and in vehicles when driving with a child under 12 years of age, and sale of tobacco products to those under 18. It also prohibits advertising tobacco, having shisha cafes near residential areas, schools, and mosques, and the entry of pregnant women into shisha cafes (UAE Government, 2021).

## Women's Health

Certain components of women's health are well developed in the UAE. For example, when it comes to maternal health and care, the vast majority of births take place in hospitals, and the country's under-five mortality rate is relatively low, at 7.5 per 1,000 live births. In addition, 99% of deliveries are attended by a skilled health personnel, and the country has a maternal mortality rate

<sup>6</sup> Dokha is a traditional tobacco product of the Gulf region that consists of a combination of tobacco leaves with herbs, spices, barks, dried flowers, or dried fruit, which is smoked in a pipe known as a midwakh.

## Female Genital Mutilation (FGM)

Female Genital Mutilation (FGM) affects more than 125 million women and girls globally, predominantly across central Africa, parts of the Middle East and South Asia, and diaspora communities. This is a controversial topic in the Arab World, and there is no consensus on its origins. Moreover, no medical benefits of FGM have been recorded, and the practice has been associated with severe health complications during childbirth and labor, and infections, trauma, and lasting psychological impact.

A recent study conducted in Al Ain, consisting of UAE nationals and residents, found an FGM prevalence rate of 41.4%. However, only 13.7% of the participants' daughters had undergone FGM, which indicates a decrease in prevalence due to the criminalization of the practice in some countries and an increase in education and awareness campaigns. Type I (minimal) was the most prevalent, at 62.8%, followed by Type II (moderate) at 16.6% and Type III at 5% (Al Awar et al., 2020).

BOX 1

of only 3 per 100,000 live births, one of the lowest rates in the world (UNICEF, 2019). The public healthcare system has also prioritized early screening and detection of breast cancer, which remains one of the most common cancers afflicting UAE residents.

However, challenges remain in other aspects of women's health. Reproductive health issues and infertility are common among Emirati women: risk factors such as obesity, first-cousin marriage, vitamin D deficiency, lack of awareness on reproductive health, cultural traditions inhibiting health education and routine check-ups, and environmental toxins are common (Mousa, 2020). As in most countries around the globe, breast cancer is the most common type of cancer among women in the UAE, making up 38.8% of all new cancer cases among women of all ages in 2020. The other most common cancers affecting women in the country are thyroid, colorectal, uterine, and cervical cancers (WHO, 2021).

According to the 2017-2018 UAE National Health Report, women in the country have a higher rate of obesity than men, at around 30.6% for women and 25.1% for men. Emirati national women were more likely to be obese, with the obesity rate among Emirati women being 41.8% (UAE NHS, 2018). Pre-diabetes and diabetes are also prevalent among young Emirati females (Mohamad et al., 2021).

According to the UAE Government portal, abortion is illegal in the UAE except under two circumstances: if the pregnancy endangers the woman's life, or if there is evidence that the baby will be born with fatal deformities and will not survive (UAE Government – Information and Services, 2021).

## Men's Health

Males in the UAE are at higher risk than women for several health issues. According to Pacific Prime Dubai,

a UAE health insurance company, the most prevalent health issues affecting men in the UAE include colorectal cancer, benign prostatic hyperplasia (enlarged prostate gland), type 2 diabetes, male infertility, and cardiovascular diseases (Pacific Prime Dubai, 2019). Several of these can be characterized, at least in part, as lifestyle diseases resulting from unhealthy life habits. For example, colorectal cancer is associated with sedentary lifestyles, diets high in fat and low in fiber, smoking, obesity, and excessive consumption of red and processed meats, all health issues which exist at high rates in the UAE and the Gulf region more generally. On the other hand, healthy diets, exercise, and avoidance of smoking, drugs, and alcohol can prevent colorectal cancer, male infertility, cardiovascular diseases, type 2 diabetes, and prostate disorders.

Different sources give various figures on the rate of Emiratis and UAE residents who consume tobacco products. Nevertheless, the sources are unanimous in reporting that among citizens and residents of the UAE, men smoke tobacco products at much higher rates than women; according to a 2021 report, it is estimated that the prevalence of smoking any tobacco product is 15.67% for men and 2.404% for women (Vision 2021, 2021). This increases men's risk for the health issues mentioned above, especially cardiovascular diseases.

UAE men are also at greater risk for several types of cancers, which are also related to several of the lifestyle factors discussed above, as well as environmental and genetic factors. Colorectal, prostate, lung, and bladder cancers and leukemia accounted for over half of all new cancer cases among men in the UAE in 2020 (WHO, 2021). Lack of regular physical activity, unhealthy diets, obesity, and alcohol and tobacco consumption are all risk factors for colorectal cancers, while smoking is a risk factor for lung cancer, bladder cancer, and leukemia. Risk factors for prostate cancer, on the other hand,

include age, race, and family history; the role of diet in the incidence of prostate cancer is not clear (American Cancer Society, 2021).

Low awareness of men's health issues, including risk factors for cancers primarily affecting men, is another major issue in the country. A survey done by the Cleveland Clinic Abu Dhabi has shown that more than two-thirds of men in the UAE may be at risk of advanced prostate and testicular cancers because they do not know the symptoms of these diseases and do not schedule annual check-ups with their doctors (Cleveland Clinic Abu Dhabi, 2020). The survey also shows that many people view prostate cancer as an old-age disease, which is often not the case: as one of the most asymptomatic cancers, it is often not detected until it is at a very advanced stage. Therefore, doctors at the Cleveland Center recommend routine check-ups at the urologist for all men over the age of 40, especially if they have any pain or irregularity in their urination (Cleveland Clinic Abu Dhabi, 2020).

## Going Forward

Despite its many strengths, public health in the United Arab Emirates still faces several challenges and limitations. Studies show that non-citizen residents of the UAE use outpatient clinical services three to four times less than do citizens, indicating large inequities in healthcare utilization between nationals and the non-national residents that make up the majority of the country's population (Koorneef et al. 2017).

There is currently relatively little health-related research being produced by local institutions in the UAE; the country underperforms in research output considering its population and level of economic development (World Bank, 2018). Promoting healthcare research in the UAE going into the future is a priority for the federal government. MOHAP's Innovation Health Strategy, which aims to make the UAE one of the most innovative countries in the world for healthcare, emphasizes the importance of promoting health research and development in the country through collaborations between the federal government and health, academic, and private entities (MOHAP, 2021).

Another important factor in the future success and sustainability of healthcare in the UAE is the recruitment and training of Emirati nationals to enter the healthcare workforce and incentivizing citizens to stay in the medical field. The healthcare education field gives reasons to be hopeful in this regard: the number of UAE national students pursuing education in healthcare fields and entering the healthcare workforce is steadily increasing

(S. Gurumadhva Rao, personal communication, 26 October 2021).

## Conclusion

As in other countries in the Gulf region, public health in the United Arab Emirates is characterized by healthcare challenges endemic to high-income, rapidly developing countries in which lifestyles have transformed in a very short time, especially rising rates of lifestyle diseases. Also, the country and its institutions are young, with healthcare entities often being reorganized, decentralized, or otherwise changed; this can prove a challenge for the future of healthcare provision in the country.

There is reason to be optimistic about the future of healthcare in the country. Both the United Arab Emirates in general and the emirate of Ras Al Khaimah in particular have unique strengths which make them poised to be effective and progressive providers of healthcare not only to their own people, but to those who come to the country seeking healthcare from the Gulf region and beyond. This is already reflected in the rise of the UAE—and especially the emirates of Abu Dhabi, Dubai, and Ras Al Khaimah—as a health tourism destination in recent decades. Also, several measures of public health, such as obesity rates, number of injuries (including road injuries), and number of traffic deaths, have improved markedly in the past decade.

However, there are challenges that the nation and emirate face before they can reach their full potential as world-class healthcare providers. The UAE faces an overall shortage of qualified healthcare workers, and an acute shortage of Emirati nationals in the healthcare workforce in particular. The sustainability of the healthcare field and workforce, including bolstering the numbers of Emirati nurses, doctors, and other healthcare staff, will be one of the key issues in the future of healthcare provision in the UAE and RAK. Pursuing this as a goal at the federal and emirate level will remedy the problem of high turnover among medical staff and contribute to building a more stable and sustainable healthcare workforce.

Transitioning into a post-COVID world, fostering and improving the research and development capability of the country, and improving the sustainability of the healthcare workforce are priorities for the future of public health care in the UAE.

## References

- 90 percent of heart disease is preventable through healthier diet, regular exercise, and not smoking. (2021, September 23). *Cleveland Clinic Newsroom*. <https://newsroom.clevelandclinic.org/2021/09/29/90-percent-of-heart-disease-is-preventable-through-healthier-diet-regular-exercise-and-not-smoking/>.
- Al Jaber, A. A. (2016). *A study on the challenges in UAE Healthcare Organization* (Doctoral dissertation). <https://bspace.buid.ac.ae/handle/1234/986?mode=full>.
- Alameri, S. (2018). *Architecture of Drug Addiction Rehabilitation*. [https://www.researchgate.net/profile/Saad-Alameri/publication/329591733\\_UAE\\_Community\\_Attitudes\\_towards\\_Drug\\_Addiction\\_Rehabilitation\\_Centers/links/5c117bc64585157ac1be1439/UAE-Community-Attitudes-towards-Drug-Addiction-Rehabilitation-Centers.pdf](https://www.researchgate.net/profile/Saad-Alameri/publication/329591733_UAE_Community_Attitudes_towards_Drug_Addiction_Rehabilitation_Centers/links/5c117bc64585157ac1be1439/UAE-Community-Attitudes-towards-Drug-Addiction-Rehabilitation-Centers.pdf).
- AlBlooshi, A., Shaban, S., AlTunaiji, M., Fares, N., AlShehhi, L., AlShehhi, H., AlMazrouei, A., & Souid, A. K. (2016). Increasing obesity rates in school children in United Arab Emirates. *Obesity science & practice*, 2(2), 196–202. <https://doi.org/10.1002/osp4.37>
- Al-Darmaki, F. R., & Yaaqeib, S. I. (2015, June). Psychology and mental health services in the United Arab Emirates. *American Psychological Association*. <https://www.apa.org/international/pi/2015/06/psychology-arab>.
- American Cancer Society. (n.d.). *Pancreatic cancer risk factors*. <https://www.cancer.org/cancer/pancreatic-cancer/causes-risks-prevention/risk-factors.html>.
- American Cancer Society. (n.d.). *Prostate cancer risk factors*. Retrieved from <https://www.cancer.org/cancer/prostate-cancer/causes-risks-prevention/risk-factors.html>.
- Anthony in Insurance. (2019, January 31). Top 5 common men's health issues in the UAE. *Pacific Prime Dubai*. <https://www.pacificprime.ae/blog/top-5-common-mens-health-issues-in-the-uae/>.
- ASDA' A BCW Arab Youth Survey (2019). *The Arab Youth Survey 2019*. <http://arabyouthsurvey.creative.ae/wp-content/uploads/whitepaper/2019-AYS-whitepaper.pdf>
- Asthma in the UAE: What are the causes and treatments? (2020, February 7). *Euronews*. <https://www.euronews.com/2020/02/07/asthma-in-the-uae-what-are-the-causes-and-treatments>.
- Barbour EHS. (n.d.). *United Arab Emirates Health and Safety Legislation*. <https://www.barbour-ehs.com/wp-content/uploads/2019/12/UAE-TG.pdf>.
- Cancer Today (n.d.). *Cancer fact sheets*. <https://gco.iarc.fr/today/data/factsheets/populations/784-united-arab-emirates-fact-sheets.pdf>.
- Chaudhary, S. B. (2020, December 13). UAE's health expenditure has registered a 26% rise, First National Health Account Report says. *Gulf News*. <https://gulfnews.com/uae/health/uaes-health-expenditure-has-registered-a-26-rise-first-national-health-account-report-says-1.75873696>.
- Covid-19 worsens childhood obesity in the UAE, new study finds. (2018, February 1). *The National*. <https://www.thenationalnews.com/uae/education/covid-19-worsens-childhood-obesity-in-the-uae-new-study-finds-1.1188483>.
- Dubai Government Media Office. (n.d.). *Medical Education Program for Applicant*. <https://www.doh.gov.ae/en/programs-initiatives/meed/cme-for-applicant>.
- Emirates NBD. (n.d.) *Medical Insurance Rules in UAE*. <https://www.emiratesnbd.com/en/new-to-uae/move-to-uae/healthcare/medical-insurance-rules-in-uae/>.
- El Sherif, A. (2021, April 1). UAE first country in Arab world to begin manufacturing COVID-19 vaccine. *MobiHealthNews*. <https://www.mobihealthnews.com/news/emea/uae-first-country-arab-world-begin-manufacturing-covid-19-vaccine>

- Fahim, A. M. (2021). *From Rags to Riches: A Story of Abu Dhabi*. Makarem G Trading and Real Estate LLC.
- Fincher, D. T. (2021, June 15). *60 years later: The story of the UAE's oldest working hospital*. The Wealth Land. <https://thewealthland.com/index.php/2021/06/15/60-years-later-the-story-of-the-uaes-oldest-working-hospital/>.
- IMARC Group. (n.d.) *UAE health insurance market: Industry trends, share, size, growth, opportunity and forecast 2021-2026*. <https://www.imarcgroup.com/uae-health-insurance-market>.
- International Diabetes Federation - Home. (n.d.). *United Arab Emirates*. <https://idf.org/our-network/regions-members/middle-east-and-north-africa/members/49-united-arab-emirates.html>.
- InterNations GO! (n.d.). *Health Insurance and the Healthcare System in the UAE Explained*. <https://www.internations.org/go/moving-to-the-uae/healthcare>.
- IQVIA. (n.d.). *Middle East & Africa Pharmaceutical Market Insights*. <https://www.iqvia.com/locations/middle-east-and-africa/library/presentations/mea-pharmaceutical-market-insights-edition-11>.
- Joint Commission International. (n.d.) *About JCI*. <https://www.jointcommissioninternational.org/about-jci/>.
- Julphar Gulf Pharmaceutical Industries Manufacturers. (n.d.). *What We Do*. Retrieved from <https://www.julphar.net/en/about-us/our-story>.
- Kanad Hospital. (n.d.). *Our History*. <https://kanadhospital.org/about-us/our-history/>.
- Khamis, J. (2018, November 7). Prevention is key in the fight against genetic diseases. *Gulf News*. <https://gulfnews.com/uae/health/prevention-is-key-in-the-fight-against-genetic-diseases-1.2245557#:~:text=In%20the%20UAE%2C%20the%20most,minor%20or%20carry%20the%20gene>.
- Kohli, S. A. (2021, July 31). Lack of insurance causing mental health to deteriorate, UAE doctors say. *Khaleej Times*. <https://www.khaleejtimes.com/news/lack-of-insurance-causing-mental-health-to-deteriorate-uae-doctors-say>.
- Koorneef, E., Robben, P., & Blair, I. (2017). Progress and outcomes of Health Systems Reform in the United Arab Emirates: A systematic review. *BMC Health Services Research*, 17(672).
- Mahmoud, I., & Saravanan, C. (2020). Prevalence of Mental Disorders and the Use of Mental Health Services among the Adult Population in United Arab Emirates. *Asian Journal of Epidemiology*, 13(1), 12-19.
- Majority of UAE men aren't checking for cancer symptoms. (2020, November 16). *Cleveland Clinic Abu Dhabi Media Center*. <https://www.clevelandclinicabudhabi.ae/en/media-center/news/pages/majority-of-uae-men-arent-checking-for-cancer-symptoms.aspx>.
- Masudi, F. (2022, January 1). COVID-19: UAE federal government employees must take booster dose within one month. *Gulf News*. <https://gulfnews.com/uae/government/covid-19-uae-federal-government-employees-must-take-booster-dose-within-one-month-1.84699418>
- Ministry of Justice: Penalties stipulated in 'Communicable Disease Law' apply to concealment of COVID-19. (2020, March 24). *Emirates News Agency*. <https://wam.ae/en/details/1395302832649>.
- Mohamad, M. N., Ismail, L. C., Stojanovska, L., Apostolopoulos, V., Feehan, J., Jarrar, A. H., & Dhaheri, A. S. A. (2021). *The prevalence of diabetes amongst young Emirati female adults in the United Arab Emirates: A cross-sectional study*. *PLOS One*. <https://doi.org/10.1371/journal.pone.0252884>
- Mohamed Ibrahim, O. H., Ibrahim, R. M., Al-Tameemi, N. K., & Riley, K. (2020). Challenges associated with mental health management: Barriers and consequences. *Saudi pharmaceutical journal: SPJ: the official publication of the Saudi Pharmaceutical Society*, 28(8), 971–976. <https://doi.org/10.1016/j.jsps.2020.06.018>
- MOHAP launches 'Together We Move' campaign to promote physical activity among women. (2021, January 5). *Emirates News Agency*. <http://wam.ae/en/details/1395302899670>.

- More than half of UAE residents affected by heart disease. (2021, September 16). *Cleveland Clinic Abu Dhabi Media Center*. <https://www.clevelandclinicabudhabi.ae/en/media-center/news/pages/more-than-half-of-uae-residents-affected-by-heart-disease.aspx>.
- Mousa, M. (2020). *Women's reproductive health concerns in the United Arab Emirates* (Policy Paper No. 35). Sheikh Saud bin Saqr Al Qasimi Foundation for Policy Research. Retrieved from <http://dx.doi.org/10.18502/aqf.0135>.
- Oulhaj, A., Bakir, S., Aziz, F., Suliman, A., Almahmeed, W., Sourij, H., & Shehab, A. (2020). *Agreement between cardiovascular disease risk assessment tools: An application to the United Arab Emirates population*. PLOS One. <https://journals.plos.org/plosone/article?id=10.1371%2Fjournal.pone.0228031>.
- Our World in Data. (2021). *Coronavirus pandemic (COVID-19) – the data*. <https://ourworldindata.org/coronavirus-data#cases-and-deaths>.
- Paulo, M. S., Loney, T., & Lapão, L. V. (2019). How do we strengthen the health workforce in a rapidly developing high-income country? A case study of Abu Dhabi's health system in the United Arab Emirates. *Human Resources for Health*, 17(9).
- Radwan, H., Ballout, R. A., Hasan, H., Lessan, N., Karavetian, M., & Rizk, R. (2018). The epidemiology and economic burden of obesity and related cardiometabolic disorders in the United Arab Emirates: A systematic review and qualitative synthesis. *Hindawi Journal of Obesity*, 2018(2185942), 1-23. <https://doi.org/10.1155/2018/2185942>
- RAK Hospital (2019). *Award Winning Facility*. <https://www.rakhospital.com/about-us/award-winning-facility/>
- RAKMHSU. (n.d.). *About RAKMHSU*. <https://rakmhsu.ac.ae/about-us>.
- Razzak, H. A., Harbi, A., & Ahli, S. (2020). Tobacco Smoking Prevalence, Health Risk, and Cessation in the UAE. *Oman Medical Journal*, 35(4), e165. <https://doi.org/10.5001/omj.2020.107>
- Ridge, N. (2014). *Education and the reverse gender divide in the Gulf states: Embracing the global, ignoring the local*. Teachers College Press.
- Salama, R. A. A., Tadroos, T. M., Sikandar, I., Ashraf, A., & Khan, A. (2021). Attitudes of healthcare professionals towards mental illness: A survey study in Ras Al Khaimah. *Open Journal of Psychiatry*, 11(3).
- Sulaiman, N., Elbadawi, S., Hussein, A., Abusnana, S., Madani, A., Mairghani, M., Alawadi, F., Sulaiman, A., Zimmet, P., Huse, O., Shaw, J., & Peeters, A. (2017). Prevalence of overweight and obesity in United Arab Emirates Expatriates: the UAE National Diabetes and Lifestyle Study. *Diabetology & Metabolic Syndrome*, 9, 88. <https://doi.org/10.1186/s13098-017-0287-0>
- Survey reveals high number of heart risk factors across UAE population. (2019, September 22). *Cleveland Clinic Abu Dhabi*. <https://www.clevelandclinicabudhabi.ae/en/media-center/news/pages/survey-reveals-high-number-of-heart-risk-factors-across-uae-population.aspx>.
- The official portal of the UAE Government. (2021). *Combating Communicable Diseases*. <https://u.ae/en/information-and-services/health-and-fitness/combating-communicable-diseases>.
- The World Bank (n.d.). *Cause of death, by injury (% of total)*. Retrieved from <https://data.worldbank.org/indicator/SH.DTH.INJR.ZS>.
- UAE Embassy in Washington, DC. (n.d.). *Novel coronavirus (COVID-19): Information on UAE response*. <https://www.uae-embassy.org/novel-coronavirus-covid-19-information-uae-response#Restrictions>.
- UNICEF Data. (2020, February 6). *United Arab Emirates (ARE) - demographics, health & infant mortality*. <https://data.unicef.org/country/are/>.
- United Arab Emirates Government Portal (n.d.). *Road safety*. <https://u.ae/en/information-and-services/justice-safety-and-the-law/road-safety>.

United Arab Emirates Government Portal. (n.d.). *Post COVID-19 recovery – strategy, initiatives and plans*. <https://u.ae/en/information-and-services/justice-safety-and-the-law/handling-the-covid-19-outbreak/post-covid-19-recovery-strategy-initiatives-and-plans>.

United Arab Emirates Government Portal. (n.d.). *Women's reproductive and sexual healthcare*. <https://u.ae/en/information-and-services/health-and-fitness/woman-reproductive-and-sexual-healthcare>.

United Arab Emirates Ministry of Cabinet Affairs. (2018, January 7). *Statistics by Subject – Demography and Social*. <https://fcsc.gov.ae/en-us/Pages/Statistics/Statistics-by-Subject.aspx#/%3Ffolder=Demography%20and%20Social/Health/Health%20Services&subject=Demography%20and%20Social>.

United Arab Emirates Ministry of Foreign Affairs and International Cooperation. (2022, January 1). *Travel ban on non-vaccinated Emiratis from 10th January*. <https://www.mofaic.gov.ae/en/mediahub/news/2022/1/1/01-01-2022-uae-travel>

United Arab Emirates Ministry of Health and Prevention. (n.d.). *Issue of a Health Card*. <https://www.mohap.gov.ae/en/services/issue-medical-card>.

United Arab Emirates Ministry of Health and Prevention. (n.d.) *Ministry of Health and Prevention Hands over two mobile clinics in Ras al-Khaimah and Fujairah*. <https://www.mohap.gov.ae/en/MediaCenter/News/Pages/1542.aspx>.

United Arab Emirates Ministry of Health and Prevention. (n.d.) *Ministry of Health Holds First Meeting for Committee on Promoting Safety and occupational health of facilities workers*. <https://www.mohap.gov.ae/en/MediaCenter/News/Pages/1479.aspx>.

United Arab Emirates Ministry of Health and Prevention. (n.d.). *MOHAP unveils digital solutions technologies in the mental health field and train young doctors on the virtual reality experience*. <https://www.mohap.gov.ae/en/MediaCenter/News/Pages/2034.aspx>.

United Arab Emirates Ministry of Health and Prevention. (n.d.). *UAE National Health Survey Report 2017-2018*. [https://www.mohap.gov.ae/Files/MOH\\_OpenData/1556/UAE\\_NHS\\_2018.pdf](https://www.mohap.gov.ae/Files/MOH_OpenData/1556/UAE_NHS_2018.pdf).

Verma, J. (2020, January 12). *UAE is set to become hub of medical tourism*. Omnia Health Insights. <https://insights.omnia-health.com/hospital-management/uae-set-become-hub-medical-tourism>.

Vision 2021. (n.d.). *National Agenda 2021*. <https://www.vision2021.ae/en/national-agenda-2021>.

Vision 2021. (n.d.). *World-class Healthcare*. <https://www.vision2021.ae/en/national-agenda-2021/list/world-class-circle>.

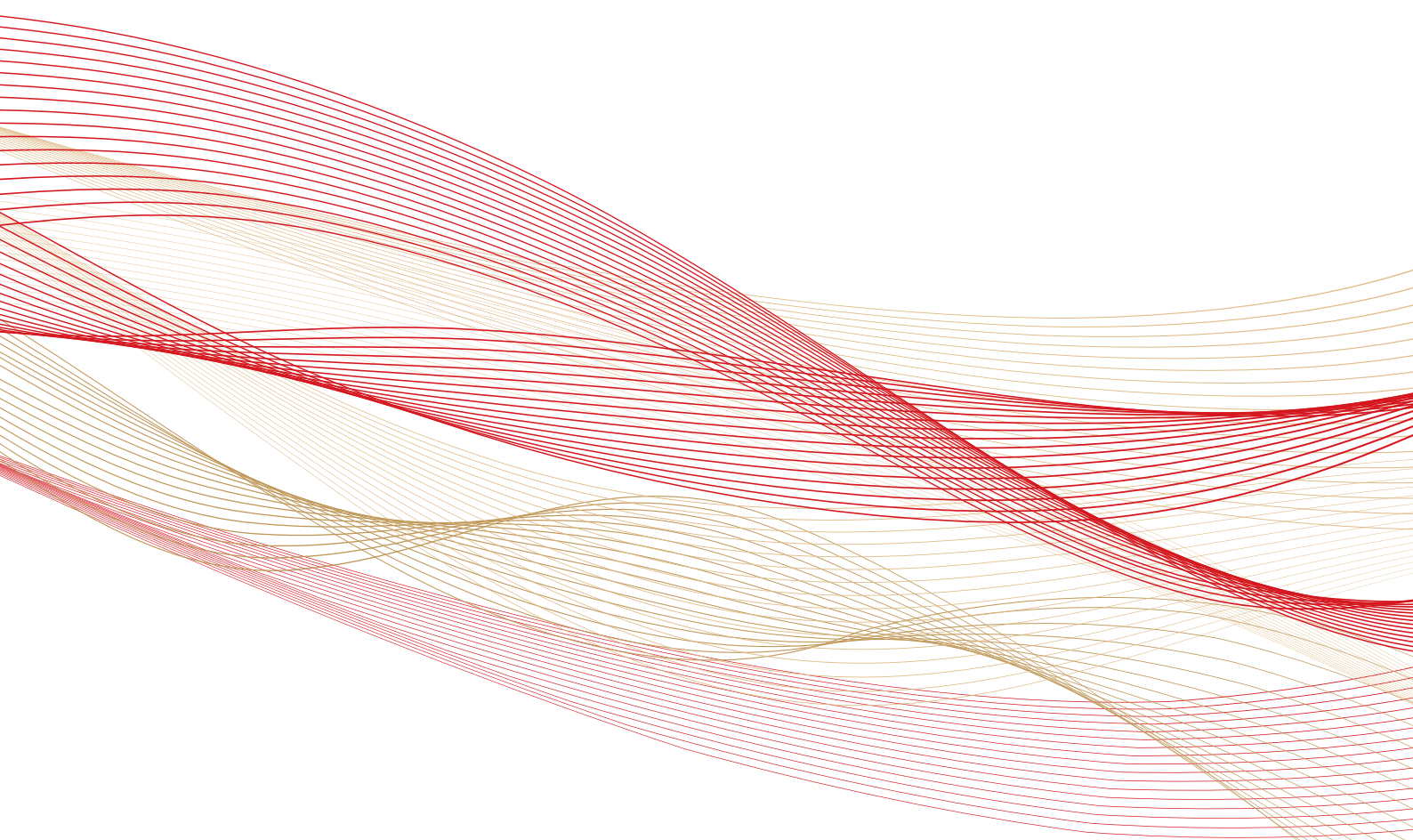
World Bank Data. (n.d.) *Mortality caused by road traffic injury (per 100,000 population) - United Arab Emirates*. [https://data.worldbank.org/indicator/SH.STA.TRAF.P5?locations=AE&most\\_recent\\_value\\_desc=true](https://data.worldbank.org/indicator/SH.STA.TRAF.P5?locations=AE&most_recent_value_desc=true).

World Bank Data. (n.d.). *Scientific and technical journal articles*. [https://data.worldbank.org/indicator/IP.JRN.ARTC.SC?year\\_low\\_desc=true](https://data.worldbank.org/indicator/IP.JRN.ARTC.SC?year_low_desc=true).

World Health Organization. (n.d.). *Countries that have passed legislation on Universal Health Coverage (UHC)*. [https://www.who.int/data/gho/data/indicators/indicator-details/GHO/countries-that-have-passed-legislation-on-universal-health-coverage-\(uhc\)](https://www.who.int/data/gho/data/indicators/indicator-details/GHO/countries-that-have-passed-legislation-on-universal-health-coverage-(uhc)).

Zaman, S. (2019, June 8). *Medwakh smoking more harmful than cigarettes*. *Gulf News*. <https://gulfnews.com/uae/health/medwakh-smoking-more-harmful-than-cigarettes-1.64284225>.





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