World Health Organization
REGIONAL OFFICE FOR THE Eastern Mediterranean
Regional Committee for the Eastern Mediterranean
Seventieth session
Provisional agenda item 3(c)

EM/RC70/5
September 2023

Health workforce in the Eastern Mediterranean Region: from COVID-19 lessons to action

Executive summary

The COVID-19 pandemic has highlighted once again the importance of health workers in maintaining the health of populations and providing essential health services. It also resulted in greater recognition of the critical role of the health workforce in delivering essential public health functions and responding to health emergencies.

The WHO Eastern Mediterranean Region, with its highly diverse and often challenging political, social, economic and demographic contexts, faces longstanding shortages in health workforce. Although most countries and territories have made significant progress in increasing their workforce production capacities, this increase has not kept pace with the growth in population. At the halfway point for implementation of the Sustainable Development Goals (SDGs), health workforce projections indicate that these shortages will continue and that the Region will account for more than 20% of the estimated global shortfall of 10 million health workers by 2030.

More than a quarter of the countries and territories of the Region (namely Afghanistan, Djibouti, Pakistan, Somalia, Sudan and Yemen) are on the WHO health workforce support and safeguards list (2023) of countries with the most pressing health workforce challenges. Moreover, the majority of countries are challenged by limited employment capacities, imbalances in health workforce distribution and skill mix, weak governance and regulatory capacities, and insufficient information and evidence to inform policy. In addition, the protracted crises and deteriorating working conditions in many countries and territories have increased the international mobility of health workers. The COVID-19 pandemic has exacerbated these challenges and exposed the chronic underinvestment in health workforce.

Despite high-level global and regional commitments to strengthening the health workforce, progress has not reached the desired level and pace. WHO therefore proposes a call for action to accelerate implementation of the Framework for action for health workforce development in the Eastern Mediterranean Region 2017–2030. Priority areas for action are: increasing and sustaining investment in the production and employment of health workers, including better alignment with the needs of health systems; strengthening the health workforce at the primary care level to ensure competent delivery of essential public health functions, including emergency preparedness and response and addressing the gaps exposed by the COVID-19 pandemic; reorienting and transforming health professional education to address the competency needs of current and future health workers; improving retention of health workers and responding to the increasing mobility of health professionals both within and outside the Region; protecting and safeguarding the health and well-being of the health workforce; and promoting regional solidarity in support of national strategies, with emphasis given to countries on the WHO support and safeguards list.

The Regional Committee for the Eastern Mediterranean is invited to discuss this technical paper and adopt the resolution calling for accelerated action to enhance and scale up a fit-for-purpose health workforce to advance towards the health-related SDGs.

Introduction

1. The health workforce is a key pillar of all health systems. The term "health workforce" encompasses all people engaged in work actions whose primary intent is to improve health, including doctors, nurses, midwives, public health professionals, laboratory technicians, health technicians, medical and non-medical technicians, personal care workers, community health workers, healers and traditional medicine practitioners. The term also includes health management and support workers such as hospital administrators, health managers and social workers, and other occupational groups in health-related activities *(1)*. Health systems depend on the availability of a competent, motivated and well-supported health workforce.

2. The COVID-19 pandemic led to increased recognition and appreciation of the critical role of health workers. Their heroic commitment as they continued to serve, at risk to their own health and even their lives, was clearly evident: thousands of health workers were infected with the virus and many died while saving others *(2)*. During the pandemic, successive rounds of WHO's global pulse surveys – conducted to assess the continuity of essential health services – consistently showed that most countries reported disruption to services and identified health workforce challenges, such as shortages, as a main cause of the disruption *(3)*.

3. Over the years, Member States of the Eastern Mediterranean Region have made commitments to address health workforce challenges and several global and regional strategies have been endorsed. The Framework for action for health workforce development in the Eastern Mediterranean Region 2017–2030 *(4)* builds on the Global Strategy on Human Resources for Health: Workforce 2030 *(5)*, and on the recommendations of the report of the High-level Commission on Health Employment and Economic Growth in 2016, to support comprehensive approaches to develop a fit-for-purpose, strong and resilient health workforce. In 2019, the 66th session of the Regional Committed adopted resolution EM/RC66/R.3 on strengthening the nursing workforce to advance universal health coverage (UHC) in the Eastern Mediterranean Region. Further, the 69th session of the Regional Committee adopted resolution EM/RC69/R.2 on building resilient health systems to advance UHC and ensure health security in the Region, with one of its seven priorities calling for enhancing and scaling up a fit-for-purpose, fit-to-practice health workforce.

4. Target 3.c of the Sustainable Development Goals (SDGs) is to substantially increase health financing and the recruitment, development, training and retention of the health workforce in developing countries, especially in least developed countries *(6)*. The year 2023 marks the halfway point of the 2030 Agenda for Sustainable Development, and therefore provides an opportunity to review progress, analyse challenges and map the way forward to accelerate action. While there has been progress towards achieving Target 3.c in countries and territories of the Eastern Mediterranean Region, significant challenges remain. Most countries are experiencing health worker shortages and six (Afghanistan, Djibouti, Pakistan, Somalia, Sudan and Yemen) are included in the WHO support and safeguards list (2023) of countries with the most pressing health workforce challenges related to advancing UHC *(7)*. While health workforce shortages are expected to decrease globally by 2030, they are likely to remain at a similar level in the Region should current trends continue. Projections indicate that the Region will face a shortage of 2.1 million health workers, accounting for more than 20% of the estimated global shortfall of 10 million, by 2030.

5. This technical paper presents an analysis of the current health workforce situation and challenges in the Region using health labour market analysis. It then summarizes the implications of lessons learned from the COVID-19 pandemic and the impact of the changing demographic context and digital transformation on the current and future health workforce in the Region. In addition, and most importantly, the paper proposes a call for action for Member States and partners to expedite the implementation of the Framework for action for health workforce development in the Eastern Mediterranean Region 2017–2030, and highlights the main actions to guide progress.

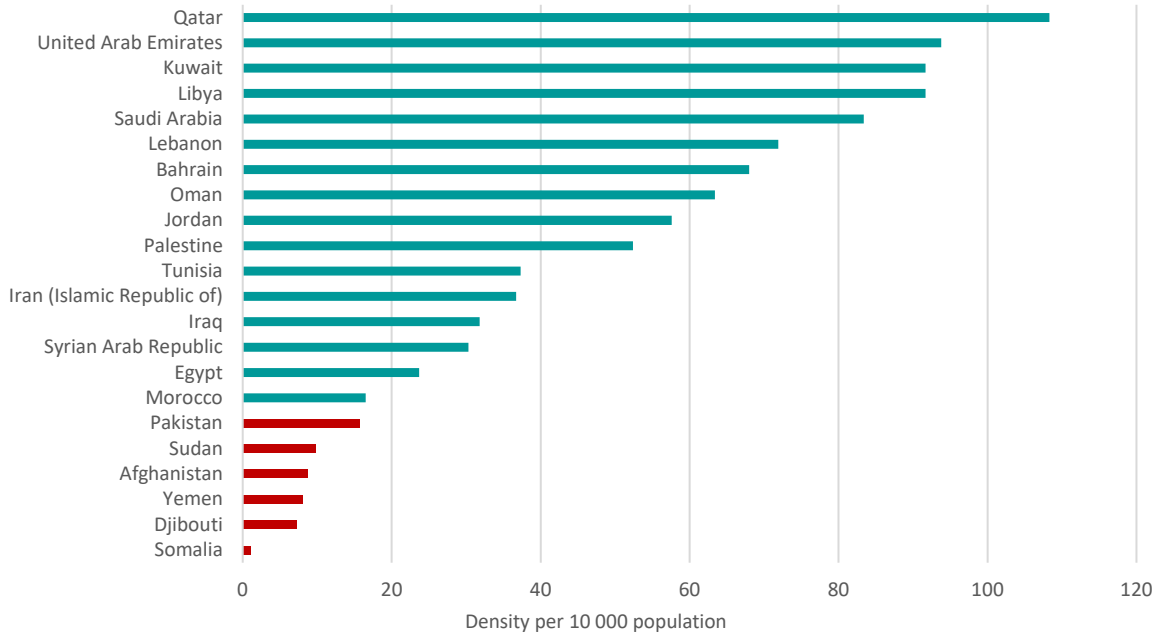
Health workforce in the Eastern Mediterranean Region

6. Understanding health labour market dynamics is critical to guide future health workforce strategies. Various factors affect the need and demand for and supply of health workers. Supply is the number people currently working or willing to work in the health sector. This number is increased by newly qualified professionals and by workers from abroad (inflows) and decreased through retirement, emigration and other reasons for stopping work (outflows). Excess supply means unemployment. Demand is the number of jobs available in the public and private sectors, including self-employment. Need refers to the number and type of workers required to meet the health needs of a population. Additional factors relate to the occupational and demographic attributes of workers, including their distribution by geographical area and by types and levels of service. Factors such as remuneration, conditions of service and work environment influence the decisions of health workers, for example, regarding their type and location of practice. Other factors influence the decisions of employers, such as their capacity to pay and the demand for services. Macro determinants shape the health labour market and its evolution in the form of policies (health, labour, civil service, finance), governance and regulation, among other aspects.

7. Although progress has been made in the Region in implementing WHO's National Health Workforce Accounts (NHWA) and national health workforce observatories, health workforce information to analyse health labour markets still has limitations, especially due to lack of data.

Health workforce supply: availability and accessibility of health workers

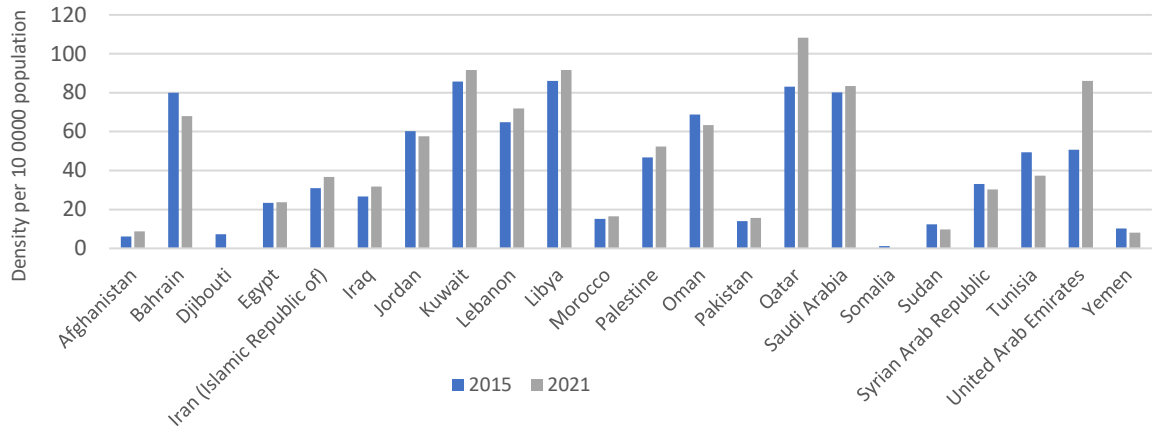
8. The Eastern Mediterranean Region has a long history of health worker shortages, particularly in the countries and territories directly or indirectly affected by protracted crises or conflict. The density of physicians, nurses and midwives per 10 000 population ranges from 1.1 in Somalia (2014) to 108.3 in Qatar (2021) as shown in Fig. 1, where the six countries included in the WHO support and safeguards list are highlighted in red.



Note: Latest available data for Djibouti and Somalia from 2014 *(8)*.

Source: Eastern Mediterranean Health Observatory *(9,10)*.

Fig.1. Density of physicians, nurses and midwives in the Eastern Mediterranean Region, by country/territory (2021 or latest available)



Note: Latest available data for Djibouti and Somalia from 2014 *(8)*.

Source: Eastern Mediterranean Health Observatory *(9,10)*.

Fig. 2. Trend in density of physicians, nurses and midwives in the Eastern Mediterranean Region (2015 and 2021 or latest available)

9. Over the last six years, the trend in the density of doctors, nurses and midwives indicates little progress in most countries and territories, or even a decline (Fig. 2). If current production trends continue, the shortage of nurses and midwives in the Region is projected to increase from 0.9 million in 2018 to 1.2 million by 2030, despite a slight decrease in global shortages *(11,12)*.

10. The sex distribution of health workers varies across the Eastern Mediterranean Region. However, in most countries and territories, the majority of physicians are male (65%) and the majority of nurses are female (79%) (Fig. 3 and 4). In Libya and Pakistan, the proportion of female physicians in the workforce is higher than males (Fig. 3). The proportion of female nurses is more than 80% in Bahrain, Egypt, Libya and Oman, whereas male nurses are the majority in Afghanistan, Morocco and Somalia (Fig. 4).

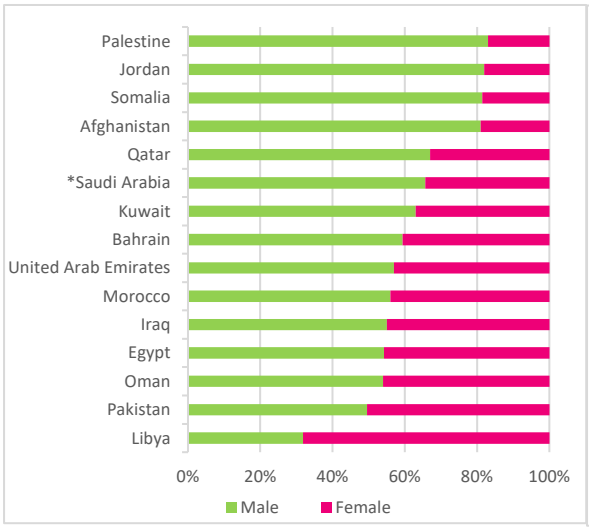


Fig. 3. Sex distribution of physicians in countries/territories in the Eastern Mediterranean Region for which data are available (2015–2020)

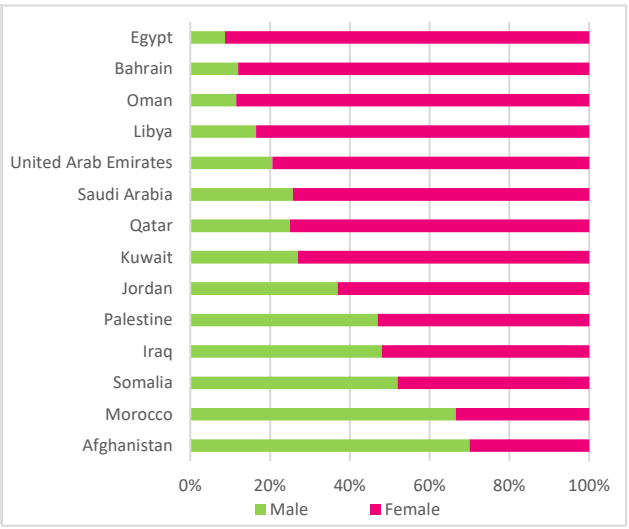


Fig. 4. Sex distribution of nurses and midwives in countries/territories in the Eastern Mediterranean Region for which data are available (2015–2020)

* Dentists are included.

Sources: Afghanistan: Health workforce survey 2019, Ministry of Public Health; Bahrain: Human resources 2019, Ministry of Health; Egypt: NHWA 2017; Iraq: Annual statistical report 2018, Ministry of Health and Environment; Jordan: Annual human resources for health (HRH) report 2017, National HRH observatory; Kuwait: Manpower statistics 2015, Ministry of Health; Libya: HRH observatory 2019, Ministry of Health (unpublished report); Morocco: Activity report of the human resources department 2016, Ministry of Health; Oman: Annual health report 2020, Ministry of Health; Pakistan: Medical and Dental Council, Ministry of National Health Services, Regulation and Coordination 2019; Palestine: National HRH observatory 2018; Qatar: NHWA 2018; Saudi Arabia: Statistical yearbook 2020, Ministry of Health; Somalia: HRH development policy 2016–2021, Ministry of Health; United Arab Emirates: NHWA 2018 and NHWA report 2019–2020.

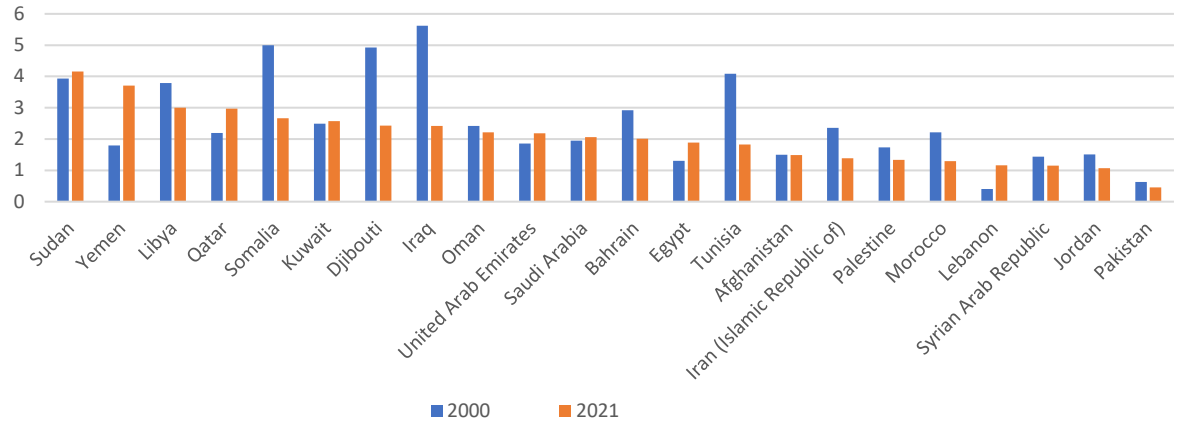
Source: ILOSTAT *(13)*.

Fig. 5. Women's share of employment overall and in health and social care occupations in countries/territories of the Region for which data are available

11. The health sector provides employment opportunities for women. In the Eastern Mediterranean Region, the female share in employment is significantly higher in the health and social care sector than in other sectors (Fig. 5).

12. Imbalanced geographical distribution of health workers and their uneven distribution at different levels of service are significant challenges in most countries and territories of the Region. For example, 70% of health workers in Sudan work in urban areas although only 33% of the population live in urban settings (*14*). In Pakistan, the density of physicians is four times higher in urban areas compared to rural areas and density of nurses and midwives is nearly three times higher in urban compared to rural areas (*15*). In Afghanistan, more than twice as many health workers work in urban areas compared with rural areas, whereas the majority of the population resides in rural areas (*16*).

13. An appropriate skill-mix is critical for the delivery of quality health services, which require a well-balanced team of different cadres of health professionals. The ratio of nurses and midwives to physicians can be used as a proxy indicator of an efficient skill mix. In 13 countries and territories of the Region, this ratio decreased between 2000 and 2021 (Fig. 6). At present, Afghanistan and Pakistan have more doctors than nurses, indicating a severe skill-mix imbalance.



Source: Eastern Mediterranean Health Observatory *(17)*.

Fig. 6. Ratio of nurses and midwives to physicians in countries/territories of the Eastern Mediterranean Region (2000 and 2021)

Inflows: the education pipeline for health workers and international recruitment

14. The number of health professional education institutions and their production capacities have increased in the Region over the past few decades. For example, in Pakistan, the number of medical schools has increased from 20 in 1990 to 123 in 2023 for a current population of 240 million (*18*), whereas Sudan has 72 medical schools for 41 million population (up from 3 medical schools in 1980) (*19*), the Islamic Republic of Iran has 63 for 80 million population (up from 7 in 1979) (*20*), Egypt has 39 for 109 million population (from 11 in 1980) (*21*), Saudi Arabia has 37 for 34 million population (up from 5 in 2000) (*22*,*23*), and Iraq has 34 for 39 million population (up from 5 in 1980) (*24*). However, this substantial increase in the number of medical schools has not always kept pace with population growth and is not reflected in a commensurate increase in health workforce densities. Similar trends have been observed in several other health professions. Beyond the numbers, the quality of medical education also remains a concern (*25*).

15. The number of admissions to medical schools or the number of graduates would be more indicative of countries' production capacities; however, information for the Region is scarce. The most recent available data on the production capacities of medical schools indicate that the number of graduate physicians per year varies between 1.3 per 100 000 population in Qatar (2020) and 19.8 in Jordan (2021) (*17*). The trend in graduations from domestic education institutions points to persistent challenges in skill-mix in the Region due to the continuing decrease in the ratio of nurses and midwives to physicians. In countries with available and comparable data, more physicians graduate than nurses annually, for example: 1.1 physicians graduate per nurse in Afghanistan (2019), Jordan (2021), Saudi Arabia (2021) and the United Arab Emirates (2019) and 3.1 physicians graduate per nurse in the Syrian Arab Republic (2021) (*17*). A study in Sudan shows that the number of graduate doctors was more than four times the number of graduate nurses between 2001 and 2018 (*26*).

16. Postgraduate health professional education is provided across the Region in various forms, including through academic and professional programmes. The Arab Board of Health Specializations was established in 1978 and most countries in the Region have specialty boards governing residency education, leading to specialization in various branches of medicine and other health professions. However, postgraduate education faces challenges related to quality, inadequate capacities and funding.

17. The high-income countries of the Region, namely the Gulf Cooperation Council (GCC) countries, have a long history of recruiting health workers from abroad. They have made progress in developing their domestic health workforce but are still a long way from achieving self-sufficiency *(27)*. In 2022, WHO reported that between 70% and 80% of health personnel in the six GCC countries were foreign-born or foreign-trained *(28)*. In Saudi Arabia, the proportion of non-national physicians was around 63% and that of nurses 57% in 2021 *(29)*; the physicians mainly come from Egypt, India, Jordan, Pakistan and Sudan, and nurses mainly from India and the Philippines *(30)*. More than 90% of nurses in Kuwait and Qatar are non-nationals *(10)*.

Outflows: retirements, early exits and international mobility of health professionals

18. Data on outflows are generally very limited for the Region. All countries experience an expected attrition rate as health workers reach retirement age. Such outflows can be forecast based on the age distribution of the existing workforce, although this is more difficult in countries that rely heavily on expatriate workers who rarely stay until retirement age. Other types of outflow, such as emigration or early withdrawal from the labour market due to health or other reasons, are less predictable and can have an important negative impact on health service delivery. Low- and middle-income countries in the Region largely lose health personnel, mainly physicians, to emigration.

19. Globally, approximately 15% of health workers are working outside their countries of birth or first professional qualification *(31)*. The motivation to migrate is triggered by a number of factors such as better working conditions, job stability or security, and educational or career development

opportunities *(32,33)*. The Lebanese Order of Physicians estimates that nearly 40% of doctors and approximately 30% of nurses have left the country since the start of the economic crisis in 2019 *(34)*.

20. Destination countries for health workers are principally the GCC countries and higher-income member countries of the Organisation for Economic Co-operation and Development (OECD). The General Medical Council of the United Kingdom of Great Britain and Northern Ireland reports that between 2017 and 2021, 5163 doctors from Pakistan, 5024 from Egypt, 2087 from Sudan and 530 from Jordan joined the medical register *(35)*; the number of nurses migrating from Region to the United Kingdom was negligible. In 2021, the Medical Council of Ireland reported that the number of active doctors in the country included 270 trained in Egypt, 96 trained in Iraq, 91 trained in Libya, 1406 trained in Pakistan, 802 trained in Sudan and 32 trained in the Syrian Arab Republic *(36)*.

21. The WHO Global Code of Practice on the International Recruitment of Health Personnel, approved by Member States in 2010, although non-binding, is an important global governance instrument for bilateral, national, regional and global responses to the challenges of health personnel migration and health systems strengthening, which aims to ensure that the health workforce is sustainable *(31)*. A round of reporting on the implementation of the Code is conducted every three years. During the fourth and latest round in 2022, encouraging developments were seen compared to previous rounds: 18 countries/territories in the Region completed the reporting, 11 countries/territories reported taking steps to implement the Code and eight reported the use of bilateral agreements for the international recruitment of health personnel, with half of these agreements reflecting the Code's guiding principles *(28)*. The Eastern Mediterranean Region is at a crucial time for recognizing and addressing the challenges associated with labour migration governance.

22. Health worker mobility was further accelerated by the COVID-19 pandemic, which caused a global rise in demand for health workers and exacerbated capacity gaps and shortages in sending countries. This prompted a number of measures by governments; for example, some introduced a suspension on the emigration of health personnel during the pandemic while others simplified processes for immigration. The situation highlighted once again the potential role that diaspora and migrant communities can play in providing essential services and supporting national health systems. Objective 19 of the Global Compact for Safe, Orderly and Regular Migration commits countries to "create conditions for migrants and diasporas to fully contribute to sustainable development in all countries" *(37)*, highlighting the key role that can be played by these groups when they are empowered to contribute towards achieving the SDGs in their countries of origin, transit and destination.

23. Skilled health workers from the Region who are currently working abroad have demonstrated their willingness to contribute to the health systems in their country of origin – both in policy development and service delivery. Countries can benefit from tapping into these potential resources to help to strengthen their health workforce and thus their health systems. The engagement itself can be multifaceted, ranging from skill- and experience-sharing, to raising funds and equipment for source countries *(38)*.

24. Pakistan, Somalia and Sudan provide good examples of building capacities in the health ministry to facilitate diaspora engagement and enable short- and long-term knowledge transfer modalities. The Government of Pakistan has established a centralized online platform *(39)* to harness the experience and knowledge of Pakistani health workers across the world. It connects overseas health professionals with volunteering opportunities in Pakistan, enables the exchange of clinical and non-clinical expertise, mobilizes the diaspora during national emergencies and humanitarian crises, and contributes to broader health systems strengthening. In Sudan, the Federal Ministry of Health established a Diaspora Engagement and Empowerment Department (DEED) in 2021. Placed under the Sudanese Directorate General of Global Health, DEED facilitates effective engagement of the Sudanese diaspora in supporting the health system and services in Sudan and institutionalizing functions and collaboration. Meanwhile, Somalia and Finland have a long history of cooperation, as the Somali diaspora is the largest non-European ethnic minority in Finland *(40)*. The Finnish-Somali diaspora actively engages in health sector development in Somalia with support from the Government of Finland; for example, the Migration for

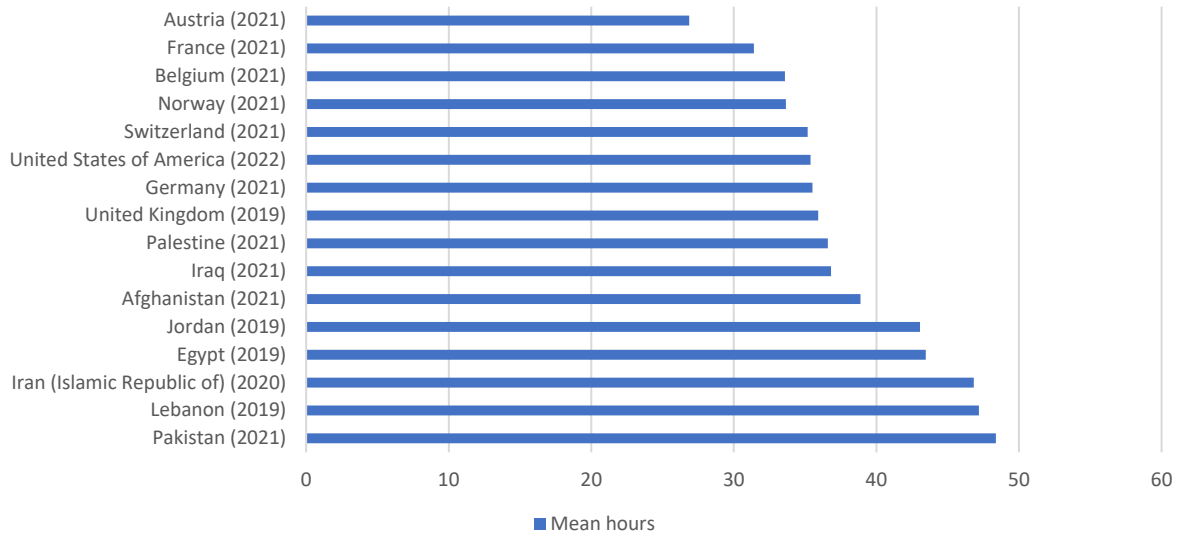
Development in Africa FINNSOM health project enables the temporary return of the diaspora, from a couple of months to years, to facilitate knowledge transfer.

25. Finally, it is worth noting that a number of countries and territories in the Region have higher rates of weekly worked hours per employee in health and social occupations when compared to OECD countries (Fig. 7). This is a further indication of difficult working conditions and high workloads in the Region, which add to the attraction of emigration.

Demand for health workers

26. Demand for health workers is a function of the capacity of employers (whether public or private) to fund jobs and of individual users to pay for health services. This capacity varies among countries of the Region, and the lack of data does not permit a detailed assessment of demand. However, a number of countries in the Region have limited employment capacity, and therefore tend to suffer from high needs-based shortages. Increasing the production of education institutions can be a mitigating strategy, although caution is needed where employment opportunities are not sufficient to absorb the new graduates, which may lead to underemployment and unemployment, or where opportunities are not attractive enough to deter emigration.

27. In many countries and territories of the Region, the private sector is playing an increasingly important role in health sector employment. Within the context of rising demand for health services and chronic underinvestment in the public health sector, an exponential growth of formal private providers has been observed in the Region to fill gaps in health service provision. Particularly in countries where government health systems are strained or weak, the private sector provides a substantial source of hospital, diagnostic, specialist outpatient and general ambulatory care services, and thereby provides employment opportunities for health workers. Private providers account for 70–90% of ambulatory care visits in Afghanistan, Egypt, Lebanon, Pakistan and Somalia; 35–45% in Iraq, Jordan, Sudan and Yemen; and around 20% in the remaining countries and territories of the Region *(42)*. While the expansion of the private sector increases employment opportunities for health workers, they can also experience challenges related to the wide variation in working conditions and work environments, as well as the negative consequences of dual practice.



Source: ILOSTAT *(41)*.

Fig. 7. Mean weekly worked hours per employee in health and social occupations in countries/territories of the Eastern Mediterranean Region for which data are available in comparison to selected OECD countries

Governance and regulation

28. Governance capacities are critically important in developing, implementing and sustaining health workforce policies and strategic plans, in coordination with stakeholders and with multisectoral involvement from ministries of higher education, finance, labour, civil service and planning. Ministries of health clearly have a central role in strategic planning that goes beyond day-to-day human resources management; however, human resources departments within the ministries tend to focus on the administration of health workers and are not mandated to be involved in strategic planning. The Islamic Republic of Iran provides a distinct governance model, bringing health service provision and health professional education together under the Ministry of Health and Medical Education, to ensure linkages and coordination between service delivery and education.

29. All countries of the Region have endorsed the Salalah Declaration on Universal Health Coverage and signed the UHC2030 Global Compact, which support the development of national visions, strategies and legislation for progressing towards UHC. Indeed, countries such as Djibouti, Jordan, Libya, Morocco, Oman, Pakistan, Palestine, Sudan, the United Arab Emirates and Yemen have already developed or updated their health workforce strategic plans, or are in the process of doing so, taking the health labour market dynamics into consideration.

30. The regulation of health workforce education and practice is critical given the increasing involvement of the private sector in the education and employment of health workers. The mechanisms, capacities and maturity of health workforce regulation vary between countries of the Region. While some countries have medical councils that oversee the regulation of single professions (for example, Afghanistan, Jordan, Morocco, Pakistan and Sudan), multi-profession autonomous institutions are emerging in some countries (for example, Bahrain, Saudi Arabia and Somalia). In Kuwait, Oman and Palestine, the health ministry or mandated health authority also acts as the primary regulatory body. However, most countries of the Region are yet to develop or strengthen their regulatory mechanisms and processes. Even without complete evidence on the health workforce regulatory landscape of the Region, signs suggest challenges in capacities and harmonization, and imbalanced coverage of professions.

31. Health workforce performance is an important area that has received limited attention in the Region. Even without comprehensive evidence, there are signs pointing to problems and challenges in many countries including absenteeism, dual practice and productivity issues.

Impact of the COVID-19 pandemic on health workforce

32. From the onset of the COVID-19 pandemic, health workers were at the forefront of the response. The pandemic drew attention to existing health workforce challenges including mobility and retention, the safety, health and well-being of personnel, and the implications of digital transformation, with increasing use of digital technologies.

33. COVID-19 not only exposed and exacerbated existing health workforce challenges in the labour market, but also created many new ones. The pandemic caused a sudden increase for demand-side of services and thus for health workforce, and also highlighted limitations on the supply-side, especially shortages in specialties such as intensive care, infectious diseases, pulmonology, respiratory therapy and public health. In addition, the pandemic made more visible the difficult work environments experienced by many health workers including poor working conditions, insufficient attention to their health and well-being and, in many instances, the absence of organizational support. Taken together, these factors contribute to high attrition and resignation rates among health workers – which are only likely to have been exacerbated by the pandemic *(43)*.

34. An immediate effect of the pandemic on members of the health workforce was exposure to the risk of infection. Indeed, thousands of health care workers were infected, and many lost their lives to COVID-19 *(44)*. Studies from early to mid-2020 in countries of the Region found a seroprevalence of SARS-

CoV-2 antibodies ranging from 2.3% to as high as 39% among health workers *(45,46)*. In addition, the unprecedented impact of COVID-19 on services put health workers at increased risk of mental health conditions: at least one in four experienced symptoms of anxiety, depression, stress or burnout during the pandemic, leading to lost productivity and loss of jobs that further threatened the delivery of essential health services *(47)*.

35. In the second round of WHO's global pulse survey on continuity of essential health services during the COVID-19 pandemic, 66% of countries reported health workforce-related reasons as the most common cause of service disruption, which was similar to the first round *(48)*. By the end of 2022, 84% of countries globally still reported some extent of service disruption for at least one essential health service, and health workforce issues were cited as a common bottleneck *(28)*.

36. The pandemic also brought recognition that investment in health workforce is at the centre of tackling global health challenges. For instance, for every US$ 1 invested in vaccine doses, an estimated US$ 5 is needed to deliver the vaccine of which US$ 2.50 goes to funding, training, equipping and supporting health workers *(49)*.

37. In the Region and globally, the COVID-19 pandemic caused an initial disruption to health professional education, and its subsequent resumption through the use of digital technologies. Weak digital infrastructure, the cost of digital technologies, lack of faculty capacities in use of digital technologies and the need for curriculum adjustments for online learning were major challenges in most countries of the Region *(50)*. Nevertheless, the majority of health professional education institutions, especially medical schools, rapidly introduced online education through varied use of digital technologies, leading to a transformation of the future of health professional education.

38. As an immediate response to the pandemic, in April 2020 the Regional Office published the *Interim guidance note on the health workforce response to the COVID-19 pandemic* for rapid dissemination in the Region *(51)*. The guidance note outlined potential actions to: i) mobilize health workers to ensure health workforce availability; ii) enable health workers to deliver services effectively and efficiently; iii) protect and safeguard health workers; iv) maintain the well-being and mental health of health workers; and v) recognize and appreciate their efforts and achievements.

39. Countries and territories of the Region have adopted policies and strategies to cope with shortage of health workers, increase in workload and evolving health care needs. While COVID-19 is the immediate motivation behind several of the strategies and policies, these steps can contribute to advancing the 2030 Agenda for Sustainable Development. Oman and Somalia provide good examples of action taken during the pandemic to address health workforce challenges. In Oman, the Ministry of Health adopted a multifaceted approach to strengthen the workforce, including: expediting recruitment and accelerating deployment; implementing a robust monitoring system; developing competencies in education and retention; ensuring physical, mental and occupational well-being and safety; and investing in applications supporting the use of e-health in service delivery. The implementation of these strategic and regulatory changes is expected to have a long-lasting impact on the health system, making it more resistant to future shocks *(52)*. In Somalia in 2020, WHO trained and deployed 3327 community health workers in 51 districts to test, trace, track and treat COVID-19, especially in hard-to-reach areas. Over the course of 2020, the community health workers were responsible for detecting around 43% of laboratory-confirmed cases reported in Somalia and had followed up on 16 244 individuals in their homes as part of contact tracing activities *(53)*.

40. The COVID-19 pandemic further reinforced the need to strengthen the emergency workforce and surge capacities in countries, which is already acknowledged as a priority in the Region due to the high risk of natural disasters and outbreaks as well as protracted crises. Maintaining a healthy and productive workforce is critical both to achieving UHC and enhancing global health security.

Meeting future health workforce requirements: strengthening capacities and skills for a fit-for-purpose health workforce

41. The global health landscape, national health systems and population health needs are dynamic and ever-changing. Globalization is increasing the international mobility of health workers, which has significant implications for many countries in the Region, especially those facing protracted political and financial crises. Ageing populations increase the demand for health services and therefore for health workers, and – at the same time – the health workforce in most high-income countries is itself ageing, creating employment opportunities for health workers from other regions. The changes in the burden of disease, advances in health technologies and rapid digital transformation have significant implications for future health workforce requirements in terms of how health workers will practice, the competencies required, the skill mix, and professional education and training. Countries need to design and implement strategies and mechanisms for adapting their health workforce to these ever-changing contexts and health needs.

42. Recent advances in defining essential public health functions, developing packages of essential health services, and reorienting models of care to strengthen primary care services imply the need for multidisciplinary teams comprising different types of health workers with appropriate skill mix, which are fit-for-purpose and have capacity to respond to emergencies.

43. The impact of the health workforce in delivering essential public health functions has largely been overlooked or taken for granted, leading to fragmented approaches to public health workforce development in terms of policies, planning, implementation and monitoring. The conceptual framework for essential public health functions in countries of the Region, initially developed in 2013 *(54)*, was recently revised based on lessons learned from the COVID-19 pandemic. The draft framework now includes nine interconnected functions, namely governance, health protection, health promotion, emergency preparedness and response, surveillance, public health services, research, communication and health workforce.

44. A diverse workforce is required to support essential public health functions and the challenges of monitoring, regulating and planning a public health workforce are well recognized *(55–58)*. A workforce that delivers the essential public health functions comprises all individuals (from different professional backgrounds) who contribute to the delivery of at least one of the functions as part of integrated services and systems. This includes: i) a core group of public health personnel who have undergone professional training and/or registration with professional bodies in public health; ii) health workers who contribute to one or more essential public health function as part of their clinical role; and iii) personnel from a wide group of other occupations who contribute to addressing the social determinants of health *(59)*. The core group encompasses a range of public health professionals such as public health specialists, epidemiologists, environmental health personnel, occupational health specialists, health service managers, health economists, and others dedicated to protecting and promoting population health.

45. Although there has been a significant increase in public health professional education programmes in the Region in the last decade (for example, 19 Master of Public Health programmes were initiated in Arab countries between 2010 and 2019 *(60)*), there is a need to enhance professionalization of the workforce and develop opportunities for career progression. To define the health workforce competencies required to support the delivery of essential public health functions, WHO is developing a workforce competency framework to guide workforce planning and the education of current and future health professionals in the Region.

46. The WHO Health Emergencies Programme prioritizes building health workforce capacities to meet the target of ensuring that 1 billion people worldwide are better protected from health emergencies *(61)*. The COVID-19 pandemic, however, highlighted crucial gaps in health workforce capacities for emergency preparedness and response in countries of the Eastern Mediterranean Region. WHO's new global health emergency preparedness, response and resilience (HEPR) architecture highlights strengthening the emergency response workforce and emphasizes that the adequate protection of health

workers goes beyond infection prevention and control measures to include elements such as appropriate remuneration, training and mental health support. The Pandemic Fund also recognizes the health workforce as a main component, and projects to be financed by the first round of funding will prioritize strengthening human resources/public health workforce capacity, among other areas.

47. The digital transformation of health services is also shaping the future of health care delivery. The utility and efficiency of digital technologies for the delivery of health care was clearly demonstrated during the COVID-19 response. Many countries were able to deliver care to patients safely, even in remote locations. However, there are challenges in implementation including: concerns around data security and privacy; weak or fragmented digital health governance; financial issues (including payment of providers and security of financial transactions); lack of digital infrastructure; legal and regulatory issues; inadequate national capacities for the training of health professionals; and a degree of resistance among health workers and patients.

48. It is critical to build the capacity of health workers and equip them with the required skills to effectively use digital technologies. A WHO regional survey in 2020–2021 showed that national capacities to manage digital health are inadequate in most countries. Many personnel have built their expertise on the job without formal instruction, while others have received education and training outside the Region, which may limit their ability to implement solutions appropriate to their country and cultural context *(62)*.

49. The education of health professionals has changed significantly with digital transformation before, during and after the COVID-19 pandemic. Although the COVID-19 pandemic did not initiate these developments, it increased their implementation, and they are likely to have a long-term effect on health professional education.

Safety and well-being of health workers

50. Ensuring the health, safety and security of health workers is paramount, including protection from attacks on health care and health facilities during times of conflict, safeguarding against violence in the workplace and preventing exposure to occupational hazards. The safety and security of health workers is also fundamental to well-functioning and resilient health systems, quality of care and maintaining a productive health workforce.

51. The COVID-19 pandemic drew greater attention to the safety and well-being of health workers. As noted previously, their high risk of infection was immediately apparent at the onset of the pandemic. In addition, the stressful nature of their work including heavy workloads, long shifts, and lack of psychological and social support pose a serious risk to their well-being. In 2021, a systematic literature review found the estimated prevalence of overall burnout and emotional exhaustion among physicians in the Region to be 25% and 44%, respectively *(63)*. Even prior to the pandemic, studies found high prevalence rates of depression and burnout among nurses in the Islamic Republic of Iran and Lebanon *(64,65)*.

52. In the Eastern Mediterranean Region, the escalation in conflict and increasing humanitarian needs continue to place health workers at great risk. Every four days in 2019, a health facility in the Syrian Arab Republic was attacked *(66)*. In 2022 in the Region, 261 attacks on health care were recorded, of which 86% directly impacted health personnel *(67)*. Between January and August 2023, there were 266 reported attacks on health care in the Region, 61% of the global total *(67)*. The recent political turmoil in Sudan has led to 46 recorded attacks on health care between 15 April and 8 June 2023, causing eight deaths and 18 injuries *(68)*.

53. The WHO global health and care worker compact, adopted by the Seventy-fourth World Health Assembly through resolution WHA74.14 in 2022, provides guidance to ensure the protection and safeguarding of health workers *(69)*.

Investing in the health workforce

54. Health is a key economic and employment sector with a global economic contribution of over US$ 9 trillion in 2020 *(70)*. Investment in health systems, including in health workforce, enhances economic growth, creates jobs and promotes social protection, cohesion and health security. Between 2000 and 2011, one quarter of the economic growth in low- and middle-income countries was estimated to be attributable to improvements in population health *(71,72)*.

55. For low- and middle-income countries, more than 50% of the investments required to achieve SDG 3 are estimated to be for health workforce employment (wages and salaries), reaching 80% if the investment needed for training is taken into account *(73)*. Additionally, it is estimated that preventing future pandemics will require spending an average of US$ 5 per person per year *(74)*, of which 66% needs to be spent on improving workforce capacities in prevention, detection and response *(75)*.

56. Investments in the health workforce are often constrained by the perception that the health economy is a consumptive sector *(76,77)*. In reality, such investment produces multiple returns for both health and the economy *(72,78)*. For every US$ 1 invested in health and creating decent employment for health workers, the potential return is approximately US$ 9 *(79)*.

57. Between 1990 and 2020 in low- and middle-income countries, only 7% of all development assistance for health went to support the health workforce *(80)*. In the Eastern Mediterranean Region, in addition to the financial crisis due to the COVID-19 pandemic, many countries are experiencing armed conflicts, political instability and ongoing humanitarian crises which have limited their economic prospects. In the Region, the public component of total health expenditure varied between 7.6% in Afghanistan and 90.3% in Oman in 2020 *(81)*; a decline in public health spending has been seen in seven countries over the last decade, leading to an increase in out-of-pocket health expenditures.

58. A study of the proportion of Global Fund to Fight AIDS, Tuberculosis and Malaria grants spent on the category of human resources for health in 13 recipient countries of the Region between 2003 and 2017 estimated that, on average, it accounted for 28% (US$ 454 million) of the total of US$ 1.6 billion *(82)*. Detailed data analysis, however, indicated that only 13% was allocated to "direct" health workforce activities such as salaries, training costs and technical assistance, which highlights the need for not only an increase in spending, but also for better alignment of resources with needs.

59. Investment for health workforce will require an increase in domestic resources for health. It may not always be possible to increase this investment from single sources, but diversifying the sources of funds may contribute to the increase and sustainability of available resources. Addressing health workforce challenges, including shortages, unemployment, excessive out-migration, maldistribution, unsatisfactory working conditions, and inadequate workplace safety and protection, will require a paradigm shift towards better and smarter investment in health workforce if UHC and health security are to be attained. Investing in increasing education capacities is important for the improvement in numbers and skills of health workers; however, this may lead to unemployment if not accompanied by investment in employment, especially in countries with severe shortages such as Somalia. Investment of resources needs to be aligned with the health workforce requirements of the health system, such as workforce production, employment (creating jobs), improvement of working conditions and protecting and safeguarding health workers.

60. The COVID-19 pandemic has reinforced the vital importance of maintaining existing workforce budgets and leveraging long-term sustainable domestic and external partner investments in the health workforce to ensure there are enough health workers attracted, deployed, protected and retained – where they are needed – and with the skills, support, motivation and equipment to do their jobs safely.

Call for action

61. In summary, the main health workforce challenges in the Region include an overall shortage and/or shortages in specific cadres, inadequate production capacities, imbalances in distribution and skill mix, inadequate working conditions and work environments, low productivity, limited governance and regulation capacities, and insufficient information and evidence for policy-making. The impact of the COVID-19 pandemic has exacerbated these challenges and exposed the chronic underinvestment in the health workforce.

62. There is an urgent need to strengthen the health workforce at the primary care level to maintain essential health services, reduce capacity gaps in delivery of essential public health functions, improve emergency response and support any future surge capacities. There is also a need to respond to the increasing international mobility of health workers, to address retention challenges and to manage the implications of digital transformation for the education, practice, and safety and security of health workers.

63. Despite high-level commitments over the years, progress in strengthening the health workforce has not been at the desired level and pace in the Region. At the Fifth Global Forum on Human Resources for Health in 2023, the WHO Director-General set health workforce as a cross-cutting priority for the next WHO General Programme of Work and identified the projected shortages of health workers in the African and Eastern Mediterranean regions as requiring concerted action and investment *(83)*.

64. Halfway to the deadline for achieving the SDGs, a call for action by governments and partners is required to scale up the health workforce to advance towards SDG 3 on health and well-being and other health-related SDGs. Addressing health workforce challenges will require solidarity, alignment and synergy of efforts in order for health systems and economies to be built back better after the COVID-19 pandemic.

65. Priority action areas are outlined below and more detailed actions are provided in Annex 1.

- Accelerate the implementation of the Framework for action for health workforce development in the Eastern Mediterranean Region (2017–2030) through comprehensive health workforce strategic plans based on health labour market analysis, encompassing the production, recruitment, employment and retention of health workers. Capacities for governance and regulation of the health workforce need to be strengthened and better information and evidence needs to be generated to enable the development and implementation of strategic plans.
- Increase and sustain investment in the production and employment of health workers, ensuring better alignment with the needs of health systems and paying special attention to creating employment opportunities and improving working conditions. Investment in production capacities should prioritize nursing education to address the skill-mix gap in countries.
- Strengthen the health workforce at the primary care level to ensure the competent delivery of essential public health functions, including emergency preparedness and response and addressing gaps exposed by the COVID-19 pandemic.
- Reorient and transform health professional education to address the competency needs of current and future health workers. Health professional education should be informed by community health needs and evaluated with respect to how well workers serve these needs. Stronger collaboration between the education and health sectors, including the private sector, can improve the relevance between health professional education and the realities of health service delivery.
- Improve the retention of health workers and pay attention to the increasing mobility of health professionals within and outside the Region, especially in the context of economic crisis and increasing security concerns. In addition to strengthening retention strategies, there is a need to strengthen international collaboration on health workforce data and information exchange, and to enhance policy dialogue.

- Protect and safeguard the health and well-being of the health workforce. Governments and employers have an obligation to ensure that health workers are supported to develop required skills, are provided with needed resources, have employment security, and enjoy adequate and regular remuneration in safe, healthy and supportive environments that enable them to deliver respectful and quality care to all.
- Promote regional solidarity in support of national strategies, especially for countries on WHO's support and safeguard list.

References

1. Occupational health: health workers [website]. Geneva: World Health Organization; 2022 (https://www.who.int/news-room/fact-sheets/detail/occupational-health--health-workers, accessed 8 August 2023).
2. Health and care worker deaths during COVID-19 [website]. Geneva: World Health Organization; 2021 (https://www.who.int/news/item/20-10-2021-health-and-care-worker-deaths-during-covid-19, accessed 6 June 2023).
3. Third round of the global pulse survey on continuity of essential health services during the COVID-19 pandemic: November–December 2021. Geneva: World Health Organization; 2022 (https://www.who.int/publications/i/item/WHO-2019-nCoV-EHS_continuity-survey-2022.1, accessed 8 August 2023).
4. Framework for action for health workforce development in the Eastern Mediterranean Region 2017–2030. Cairo: WHO Regional Office for the Eastern Mediterranean; 2018 (https://apps.who.int/iris/handle/10665/275462, accessed 8 August 2023).
5. Global Strategy on Human Resources for Health: Workforce 2030. Geneva: World Health Organization; 2022 (https://www.who.int/publications/i/item/9789241511131, accessed 8 August 2023).
6. Transforming our world: The 2030 agenda for sustainable development. New York, NY: United Nations; 2015 (https://sdgs.un.org/2030agenda, accessed on 6 June 2023).
7. WHO health workforce support and safeguards list 2023. Geneva: World Health Organization; 2023 (https://www.who.int/publications/i/item/9789240069787, accessed 9 August 2023).
8. Eastern Mediterranean Region framework for health information systems and core indicators for monitoring health situation and health system performance. Cairo: WHO Regional Office for the Eastern Mediterranean; 2014 (https://rho.emro.who.int/sites/default/files/booklets/WHO-Health-Indicators-2014.pdf, accessed 8 August 2023).
9. Eastern Mediterranean Health Observatory. Personnel per 10 000 population-physicians [online database]. Cairo: WHO Regional Office for the Eastern Mediterranean (https://rho.emro.who.int/Indicator/TermID/71, accessed 8 August 2023).
10. Eastern Mediterranean Health Observatory. Personnel per 10 000 population-nursing and midwifery [online database]. Cairo: WHO Regional Office for the Eastern Mediterranean (https://rho.emro.who.int/Indicator/TermID/72, accessed 9 August 2023).
11. Strengthening the nursing workforce to advance universal health coverage in the Eastern Mediterranean Region. Cairo: WHO Regional Office for the Eastern Mediterranean; 2019 (EM/RC66/4, https://applications.emro.who.int/docs/RC_Technical_Papers_2019_4_en.pdf?ua=1, accessed 30 June 2023).
12. State of the world's nursing 2020: investing in education, jobs and leadership. Geneva: World Health Organization; 2020 (https://www.who.int/publications/i/item/9789240003279, accessed 8 August 2023).
13. ILOSTAT explorer: datasets: employment by sex, economic activity and marital status (thousands) – annual [online database]. Geneva: International Labour Organization (https://www.ilo.org/shinyapps/bulkexplorer34/?lang=en&id=EMP_TEMP_SEX_ECO_MTS_NB_A, accessed 11 May 2023).
14. Sudan annual health statistical report. Khartoum: Sudan Health Observatory, Federal Ministry of Health; 2018.
15. Primary health care systems (PRIMASYS): comprehensive case study from Pakistan. Geneva: World Health Organization; 2017:20 (https://ahpsr.who.int/publications/i/item/primasys-comprehensive-case-study-from-pakistan, accessed 20 August 2023).

16. Human resources for health profile for Afghanistan: a situational analysis of the current health workforce in the national and provincial levels. Cairo: WHO Regional Office for the Eastern Mediterranean; 2020.

17. Eastern Mediterranean Health Observatory. Data repository [online database]. Cairo: WHO Regional Office for the Eastern Mediterranean; 2019 (https://rho.emro.who.int/drs, accessed 30 June 2023).

18. Latif MZ, Wajid G. Reforming medical education in Pakistan through strengthening departments of medical education. Pak J Med Sci. 2018;34(6):1439–44. doi:0.12669/pjms.346.15942.

19. Elshazali OH, Abdullahi H, Karrar ZA. Progress, challenges and partnerships of teaching medical professionalism in medical schools in Sudan: the success story of Sudan Medical Council. Sudan J Paediatr. 2021;21(2):110–5. https://doi.org/10.24911/SJP.106-1622725530.

20. Haghdoost AA, Akbari H, Peykari N, Bahmanian A. Medical education in Iran, a brief report. Tehran: Ministry of Health and Medical Education; 2021 (https://www.researchgate.net/publication/355338874_Medical_Education_in_Iran-2021#fullTextFileContent, accessed 30 June 2023).

21. World Directory of Medical Schools [website]. World Federation for Medical Education and the Foundation for Advancement of International Medical Education and Research; 2022 (https://search.wdoms.org/?_gl=1*vuvlk*_ga*NTkwNTk5MTk5LjE2OTI4NzIyNzU.*_ga_R5BJZG5EYE*MTY5Mjg3MjI3NC4xLjEuMTY5Mjg3MjI4OC4wLjAuMA, accessed 20 August 2023).

22. Telmesani A, Zaini RG, Ghazi HO. Medical education in Saudi Arabia: a review of recent developments and future challenges. East Mediterr Health J. 2011;17(8):703–7. PMID:21977574.

23. Abdulrahman AKB, Aldayel AY, Bin Abdulrahman KA, Bukhari YR, Almotairy Y, Aloyouny S et al. Do Saudi medical schools consider the core topics in undergraduate medical curricula? BMC Med Educ. 2022;22:377. doi:10.1186/s12909-022-03452-1.

24. Alsheikh G, Al-sheikh M, Kadhim T, Hassoon A, Rowandozi I, Mustafa O. Review of Iraq's nationwide attempts to transform medical school curricula over the last ten decades. East Mediterr Health J. 2022;28(7):539–48. doi:10.26719/emhj.22.046.

25. Review of medical education in the Eastern Mediterranean Region: challenges, priorities and a framework for action (EM/RC62/3 Rev.1). Cairo: WHO Regional Office for the Eastern Mediterranean; 2015 (https://apps.who.int/iris/bitstream/handle/10665/250489/RC_technical_papers_2015_3_16503_EN.pdf?sequence=2&isAllowed=y, accessed 23 August 2023).

26. Badr E. Governance of health professions education in Sudan: implications for appropriateness of graduates to population health needs [thesis]. Leeds: University of Leeds; 2023 (https://etheses.whiterose.ac.uk/32337/1/Badr_E_Medicine_MPhil_2023.pdf, accessed 10 August 2023).

27. Sheikh JI, Cheema S, Chaabna K, Lowenfels AB, Mamtani R. Capacity building in health care professions within the Gulf cooperation council countries: paving the way forward. BMC Med Educ. 2019;19(1):83. doi:10.1186/s12909-019-1513-2.

28. Human resources for health: WHO Global Code of Practice on the International Recruitment of Health Personnel: fourth round of national reporting. Report by the Director-General (A75/14). Geneva: World Health Organization; 2022 (https://apps.who.int/gb/ebwha/pdf_files/WHA75/A75_14-en.pdf, accessed 20 August 2023).

29. Statistical yearbook. Riyadh: Ministry of Health; 2021 (https://www.moh.gov.sa/en/Ministry/Statistics/book/Pages/default.aspxm, accessed 30 June 2023).

30. Almansour H, Aldossary A, Holmes S, Alderaan T. Migration of nurses and doctors: pull factors to work in Saudi Arabia. Hum Resour Health. 2023;21(1):25. doi:10.1186/s12960-023-00809-5.

31. WHO Global Code of Practice on the International Recruitment of Health Personnel. Geneva: World Health Organization; 2010 (https://www.who.int/publications/i/item/wha68.32, accessed 20 August 2023).

32. Akhtat T, Matallana MA, Muthuswamy V, Olowu FA, Tallo V, et al. Physician migration: views from professionals in Colombia, Nigeria, India, Pakistan and the Philippines. Soc Sci Med. 2005;61(12):2492–500. doi:10.1016/j.socscimed.2005.05.003.

33. Syed NA, Khimani F, Andrades M, Ali SK, Paul R. Reasons for migration among medical students from Karachi. Med Educ. 2008;42(1):61–1. doi:10.1111/j.1365-2923.2007.02904.x.

34. López-Tomàs A. Mass exodus of doctors, nurses threatens Lebanese health care system. New York, NY: The Media Line; 2023 (https://themedialine.org/life-lines/mass-exodus-of-doctors-nurses-threatens-lebanese-health-care-system/, accessed 30 June 2023).

35. The state of medical education and practice in the UK: The workforce report 2022. London: General Medical Council; 2022 (https://www.gmc-uk.org/-/media/documents/workforce-report-2022---full-report_pdf-94540077.pdf, accessed 3 July 2023).

36. Medical workforce intelligence report 2021. Dublin: Medical Council; 2021 (https://www.medicalcouncil.ie/news-and-publications/reports/medical-workforce-intelligence-report-2021.pdf, accessed 3 July 2023).

37. Global Compact for Safe, Orderly and Regular Migration (A/RES/73/195). New York, NY: United Nations; 2018 (https://documents-dds-ny.un.org/doc/UNDOC/GEN/N18/451/99/PDF/N1845199.pdf?OpenElement, accessed 21 August 2023).

38. International Organization for Migration (IOM), WHO Regional Office for Eastern Mediterranean. Diaspora engagement in health in the Eastern Mediterranean Region: a desk review of experiences. Geneva: International Organization for Migration; 2021 (https://publications.iom.int/system/files/pdf/Diaspora-Engagement-in-Health-in-the-EMR_0.pdf, accessed 20 August 2023).

39. Yaran-e-Watan. Islamabad: Yaran-e-Watan (https://203.124.44.46, accessed 3 July 2023).

40. Somali diaspora in Finland helps revitalize northern Somalia's health sector [website]. Geneva: International Organization for Migration; 2011 (https://www.iom.int/news/somali-diaspora-finland-helps-revitalize-northern-somalias-health-sector, accessed 3 July 2023).

41. ILOSTAT: statistics on working time [online database]. Geneva: International Labour Organization (https://ilostat.ilo.org/topics/working-time/, accessed 21 June 2023).

42. Zaidi S, Das JK, Jamal W, Ali A, Siddiqui F, Thabet A et al. Government purchasing initiatives involving private providers in the Eastern Mediterranean Region: a systematic review of impact on health service utilisation. BMJ Open. 2023;13:e063327. doi:10.1136/ bmjopen-2022-063327.

43. Poon YR, Lin YP, Griffiths P, Yong KK, Seah B, Liaw SY. A global overview of healthcare workers' turnover intention amid COVID-19 pandemic: a systematic review with future directions. Hum Resour Health. 2022;20(1):70. doi:10.1186/s12960-022-00764-7.

44. Health and care worker deaths during COVID-19 [website]. Geneva: World Health Organization; 2021 (https://www.who.int/news/item/20-10-2021-health-and-care-worker-deaths-during-covid-19, accessed 3 July 2023).

45. Alserehi H, Alqunaibet A, Al-Tawfiq J, Alharbi N, Alshukairi A, Alanazi K et al. Seroprevalence of SARS-CoV-2 (COVID-19) among healthcare workers in Saudi Arabia: comparing case and control hospitals. Diagn Microbiol Infect Dis. 2021;99(3):115273. doi:10.1016/j.diagmicrobio.2020.115273.

46. Balou H, Yaghubi Kalurazi T, Joukar F, Hassanipour S, Shenagari M, Khoshsorour M et al. High seroprevalence of SARS-CoV-2 (COVID-19)-specific antibodies among healthcare workers: a cross-sectional study in Guilan, Iran. J Environ Public Health. 2021:9081491. doi:10.1155/2021/9081491.

47. Abdul Rahim HF, Fendt-Newlin M, Al-Harahsheh ST, Campbell J. Our duty of care: a global call to action to protect the mental health of health and care workers. Doha: World Innovation Summit for Health; 2022 (https://www.researchgate.net/publication/364309627_Our_duty_of_care_A_global_call_to_action_to_protect_the_mental_health_of_health_and_care_workers, accessed 8 August 2023).

48. COVID-19 continues to disrupt essential health services in 90% of countries [website]. Geneva: World Health Organization; 2021 (https://www.who.int/news/item/23-04-2021-covid-19-continues-to-disrupt-essential-health-services-in-90-of-countries, accessed 3 July 2023).

49. Deussom R, Lal A, Frymus D, Cole K, Politico MRS, Saldana K et al. Putting health workers at the centre of health system investments in COVID-19 and beyond. Fam Med Community Health. 2022;10(2):e001449. doi:10.1136/fmch-2021-001449.

50. Wajid G, Gedik G. Impact of COVID-19 on health professionals' education in Eastern Mediterranean Region. East Mediterr Health J. 2022;28(7):506–14. doi:10.26719/emhj.22.062.

51. WHO interim guidance note: health workforce response to the COVID-19 pandemic: April 2020. WHO Regional Office for the Eastern Mediterranean; 2020 (https://apps.who.int/iris/handle/10665/331949, accessed 22 August 2023).

52. Ziemann M, Chen C, Forman R, Sagan A, Pittman P. Global health workforce responses to address the COVID-19 pandemic: what policies and practices to recruit, retain, reskill, and support health workers during the COVID-19 pandemic should inform future workforce development? Policy brief 52. Geneva: World Health Organization; 2023 (https://eurohealthobservatory.who.int/publications/i/global-health-workforce-responses-to-address-the-covid-19-pandemic-what-policies-and-practices-to-recruit-retain-reskill-and-support-health-workers-during-the-covid-19-pandemic-should-inform-future-workforce-development, accessed 3 July 2023).

53. WHO in Somalia [website]. Cairo: WHO Office for the Eastern Mediterranean; 2023 (http://www.emro.who.int/somalia/information-resources/whos-work-in-somalia-for-covid-19-response.html, accessed 3 July 2023).

54. Assessment of essential public health functions in countries of the Eastern Mediterranean Region: assessment tool. Cairo: WHO Regional Office for the Eastern Mediterranean; 2017 (https://apps.who.int/iris/bitstream/handle/10665/254383/EMROPub_2017_EN_19354.pdf?sequence=1&isAllowed=y, accessed 8 August 2023).

55. Rechel B, McKee M, editors. Facets of public health in Europe. New York, NY: Open University Press; 2014.

56. Beaglehole R, Dal Poz M. Public health workforce: challenges and policy issues. Hum Resour Health. 2003;1(1):4. doi:10.1186/1478-4491-1-4.

57. WHO-ASPHER competency framework for the public health workforce in the European Region. Copenhagen: WHO Regional Office for Europe; 2020 (https://apps.who.int/iris/bitstream/handle/10665/347866/WHO-EURO-2020-3997-43756-61569-eng.pdf, accessed 3 July 2023).

58. Core competencies for public health: a regional framework for the Americas. Washington, DC: Pan American Health Organization; 2013 (https://www.paho.org/en/documents/core-competencies-public-health-regional-framework-americas, accessed 3 July 2023).

59. National workforce capacity to implement the essential public health functions including a focus on emergency preparedness and response: roadmap for aligning WHO and partner contributions. Geneva: World Health Organization; 2022 (https://apps.who.int/iris/bitstream/handle/10665/354384/9789240050402-eng.pdf, accessed 14 August 2023).

60. Nuwayhid I, Krisht G, Jabbour S, DeJong H, Zurayk H.Mapping University-Based Master of Public Health Programs in the Arab world. Ann Glob Health. 2021;87(1):70. doi:10.5334/aogh.3297.

61. Building a skilled workforce to prepare for and respond to emergencies [website]. Geneva: World Health Organization (https://www.who.int/activities/building-a-skilled-workforce-to-respond-to-emergencies, accessed 3 July 2023).

62. Regional strategy for fostering digital health in the Eastern Mediterranean Region (2023–2027). Cairo: WHO Regional Office for the Eastern Mediterranean; 2022 (EM/RC69/8, https://applications.emro.who.int/docs/Digital-Health-EMR-2023-2027-eng.pdf, accessed 3 July 2023).

63. Doraiswamy S, Chaabna K, Jithesh A, Mamtani R, Cheema S. Physician burnout in the Eastern Mediterranean region: influence of gender and related factors – Systematic review and meta-analysis. J Glob Health. 2021;11:04043. doi:10.7189/jogh.11.04043.

64. Kheyri F, Seyedfatemi N, Oskouei F, Mardani-Hamooleh M. Nurses' mental health in Iran: a national survey in teaching hospitals. Sci J Kurdistan Univ Med Sci. 2017;22(4):91–100. http://sjku.muk.ac.ir/article-1-3407-en.html.

65. Talih F, Ajaltouni J, Farhood L. Depression and burnout among nurses in a Lebanese academic medical center. J Med Liban. 2018;66(2):92–7. doi:10.12816/0047826.

66. In 4 years, 494 attacks on health killed 470 patients and health staff in Syria [website]. Cairo: WHO Regional Office for the Eastern Mediterranean; 2020 (https://www.emro.who.int/syria/news/in-4-years-494-attacks-on-health-killed-470-patients-and-health-staff-in-syria.html, accessed 3 July 2023).

67. Surveillance system for attacks on health care (SSA) [online database]. Geneva: World Health Organization; 2023 (https://extranet.who.int/ssa/Index.aspx, accessed 29 August 2023).

68. Sudan health emergency: situation report no.1, 15 April–14 June 2023. Cairo: WHO Regional Office for the Eastern Mediterranean; 2023 (https://www.emro.who.int/images/stories/sudan/WHO-Sudan-conflict-situation-report-1_14_June_2023.pdf?ua=1, accessed 15 August 2023).

69. Global health and care worker compact: technical guidance compilation. Geneva: World Health Organization; 2022 (https://www.who.int/publications/m/item/carecompact, accessed 3 July 2023).

70. Global spending on health: rising to the pandemic's challenges. Geneva: World Health Organization; 2022 (https://www.who.int/publications/i/item/9789240064911, accessed 10 August 2023).

71. Jamison DT, Summers LH, Alleyne G, Arrow KJ, Berkley S, Binagwaho A et al. Global health 2035: a world converging within a generation. Lancet. 2014;382(9908):1898–955. doi:10.1016/S0140-6736(13)62105-4.

72. Working for health and growth: investing in the health workforce. Report of the High-Level Commission on Health Employment and Economic Growth. Geneva: World Health Organization; 2016 (https://www.who.int/publications/i/item/9789241511308, accessed 10 August 2023).

73. Africa health workforce investment charter: enabling sustainable health workforce investments for universal health coverage health security for the Africa we want. Brazzaville: WHO Regional Office for Africa; 2023 (https://www.afro.who.int/sites/default/files/2023-08/Africa%20Health%20Workforce%20Investment%20Charter_v6_May%202023.pdf, accessed 20 August 2023).

74. Craven M, Sabow A, Van der Veken L, Wilson M. Not the last pandemic: investing now to reimagine public-health systems [website]. McKinsey & Company; 2021 (https://www.mckinsey.com/industries/public-and-social-sector/our-insights/not-the-last-pandemic-investing-now-to-reimagine-public-health-systems#, accessed 3 July 2023).

75. Eaneff S, Graeden E, McClelland A, Katz R. Investing in global health security: estimating cost requirements for country-level capacity building. PLOS Glob Public Health. 2022;2(12):e0000880. doi:10.1371/journal.pgph.0000880.

76. WHO Regional Office for Europe, European Observatory on Health Systems and Policies, Cylus J, Permanand, G, Smith PC. Making the economic case for investing in health systems: what is the evidence that health systems advance economic and fiscal objectives? Policy brief. Copenhagen: WHO Regional Office for Europe; 2018 (https://apps.who.int/iris/handle/10665/331982, accessed 3 July 2023).

77. Cometto G, Campbell J. Investing in human resources for health: beyond health outcomes. Hum Resour Health. 2016;14(1):1–2. doi:10.1186/s12960-016-0147-2.

78. Lauer JA, Rajan D, Bertram MY. Priority setting for universal health coverage: we need to focus both on substance and on process: Comment on "Priority setting for universal health coverage: We need evidence-informed deliberative processes, not just more evidence on cost-effectiveness." Int J Heal Policy Manag. 2017;6(10):601–3. doi:10.15171/ijhpm.2017.06.

79. Jamison DT, Summers LH, Alleyne G, Arrow KJ, Berkley S, Binagwaho, A et al. Global health 2035: a world converging within a generation. Lancet. 2013;382(9908):1898–955. doi:10.1016/S0140-6736(13)62105-4.

80. Micah AE, Solorio J, Stutzman H, Zhao Y, Tsakalos G, Dieleman JL. Development assistance for human resources for health, 1990–2020. Hum Res Health. 2022;20:51. doi:10.1186/s12960-022-00744-x.

81. Domestic general government health expenditure (% of current health expenditure) - Oman, Afghanistan [online database]. Washington, DC: World Bank; 2023 (https://data.worldbank.org/indicator/SH.XPD.GHED.CH.ZS?locations=OM-AF, accessed 7 April 2023).

82. Okunogbe A, Bowser D, Gedik G, Naseri S, Abu-Agla A, Safi N. Global Fund financing and human resources for health investments in the Eastern Mediterranean Region. Hum Resour Health. 2020;18(1):48. doi:10.1186/s12960-020-00483-x.

83. WHO Director-General's closing remarks at the 5th Global Forum on Human Resources for Health – 5 April 2023 [website]. Geneva: World Health Organization; 2023 (https://www.who.int/director-general/speeches/detail/who-director-general-s-closing-remarks-at-the-5th-global-forum-on-human-resources-for-health-5-april-2023, accessed 20 August 2023).

Annex 1. Call for action: Priority areas and actions to enhance and scale up a fit-for-purpose health workforce in the Eastern Mediterranean Region

Priority areas	Actions
Accelerate implementation of the Framework for action for health workforce development in the Eastern Mediterranean Region 2017–2030	• Undertake health labour market analysis to inform and guide the development of health workforce strategic plans and focus policy interventions • Conduct evidence-based multisectoral, multi-stakeholder policy dialogue on health workforce policies and strategies • Develop and implement comprehensive, gender-sensitive health workforce strategic plans addressing current health workforce needs and providing a strategic vison of the future health workforce • Develop and implement strategies to improve the recruitment, deployment, retention, motivation and performance of health workers • Invest in strengthening health workforce information systems and analysis, using National Health Workforce Accounts and health workforce observatories • Strengthen capacities for health workforce governance and regulation • Establish/strengthen mechanisms and processes for the regulation of health workforce practice and education to ensure a quality response to population needs, public protection and patient safety • Empower health workforce departments within ministries of health with adequate mandate, human and financial resources, and an enabling environment, and develop leadership and technical capacities through relevant training programmes • Take into account the significant and increasing participation of women in the health labour market and ensure appropriate opportunities for them when developing health workforce policies, strategies and interventions
Increase and sustain investment in the production and employment of health workers, ensuring better alignment with the needs of health systems	• Mobilize more domestic resources to the health workforce, including diversifying the funding sources • Prioritize health workforce for allocation of domestic and external resources, including significant allocation from global health initiatives where relevant • Align investments with the needs of health systems, in scaling-up health professional education at all levels and in job creation and employment • Orient investments to address skill gaps giving special attention to scaling-up education and employment of nurses and midwives
Prioritize the strengthening of the health workforce at primary care level to ensure the competent delivery of essential public health functions and emergency response, and to fill gaps exposed by the COVID-19 pandemic	• Build/strengthen multidisciplinary primary care teams in line with the model of care in the country • Address health workforce requirements for the delivery of essential public health functions • Build surge capacities for emergency response • Scale up and professionalize the public health workforce through competency frameworks and practice-based models of education and training

Priority areas	Actions
Reorient and transform health professional education to address the competency needs of current and future health workers	• Reorient health professional education towards socially accountable, competency-based models, ensuring synergies between education and health services, with a lifelong learning approach • Introduce interprofessional education and collaborative practice to prepare health professionals to be part of a multidisciplinary team • Prioritize the scaling-up of production of nurses, midwives and primary care cadres to address service gaps and skill-mix imbalances • Equip the health workforce with skills in line with the requirements of digital transformation and adapt health professional education accordingly
Improve the retention of health workers, giving special attention to the increasing international mobility of health professionals within and outside the Region	• Develop and adopt strategies for the retention of health workers based on bundling regulatory, educational, financial, personal and professional support interventions, using WHO guidelines on retention strategies • Manage international migration of health workers through bilateral and multilateral agreements • Harness the diaspora for engagement in strengthening national health systems • Strengthen international collaboration among countries on health workforce data and information exchange, research and policy dialogue
Protect and safeguard the health and well-being of health workforce	• Adopt measures to protect health workers from all occupational hazards and support their mental and psychosocial well-being • Adopt measures to prevent violence and harassment against health workers and ensure their safety and security • Provide fair and equitable compensation, social protection and employment security • Ensure healthy and decent work environments, including safe staffing levels and decent working hours, to enable health workers to deliver respectful and quality care to all
Promote regional solidarity in support of national strategies	• Establish mechanisms to facilitate regional collaboration, especially to support the countries of the Region on the WHO support and safeguards list • Facilitate technical cooperation among countries and with other WHO regions, ensuring that they benefit from each other's strengths • Harmonize partnership and development assistance to health workforce strengthening in line with regional and national priorities