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Foreword

The Government of Lebanon and WHO are working together to effectively improve the public health situation in the country with special emphasis on the five key regional priorities:

- health security and prevention and control of communicable diseases;
- noncommunicable diseases, mental health, violence and injuries, and nutrition;
- promoting health through the life-course;
- health systems strengthening; and
- preparedness, surveillance and response.

The strategic directions to address these priorities are broadly in line with WHO's 12th General Programme of Work, the Programme Budget 2016–2017 endorsed in May 2015 by the Sixty-eighth World Health Assembly and the five strategic areas of work endorsed by the WHO Regional Committee for the Eastern Mediterranean in 2012.

Reliable and timely health information is essential for policy development, proper health management, evidence-based decision-making, rational resource allocation and monitoring and evaluation of the public health situation. While the demand for health information is increasing in terms of quantity, quality and levels of disaggregation, the response to these needs has been hampered because of fragmentation and major gaps and weaknesses in national health information systems.

The strengthening of health information systems is a priority for WHO in the Region. Intensive work with Member States since 2012 has resulted in a clear framework for health information systems and 68 core indicators that focus on three main components: 1) monitoring health determinants and risks; 2) assessing health status, including morbidity and cause-specific mortality; and 3) assessing health system response. In order to successfully achieve this important goal, concerted and aligned action at national and international level is required to address the gaps and challenges in the health information systems of all countries. This will ensure the generation of more effective evidence to monitor improvement in the health situation, nationally, regionally and globally.

This comprehensive health profile is intended to serve as a tool to monitor progress in the health of the population. WHO's collaboration with its Member States will strengthen the national health information systems, and enable the generation of timely and reliable evidence to assess the health situation and trends, and the health system response. Most important, it will provide the information needed by health policy and decision-makers.

With the support of WHO and other health partners, the Ministry of Public Health has led key achievements in the health sector in Lebanon in recent decades. A unified health information system remains to be developed and a large part of the data remains fragmented. This document provides an analytical description of the country's profile in terms of population health and the health system, based on the available evidence. It also highlights the main challenges and opportunities for the health sector in the country.

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Introduction

The population of the country is 4.1 million (2013). However, the country has now absorbed a 25% increase in the population due to 1 070 189 registered Syrian refugees (2015), with an additional 765 651 nonregistered displaced Syrians (2015). In addition to the Syrians, there are around half a million Palestinian refugees (including 44 000 Palestinian refugees from the Syrian Arab Republic) registered as of 2014 with the United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA). The population under 15 years is 24.6% (2013) and life expectancy at birth is 81.2 years (2012). The literacy rate for youth (15 to 24 years) is 98.7% and for all adults is 89.6% (2007).

The burden of disease attributable to communicable diseases is 6.1%, to noncommunicable diseases 84.9% and to injuries 9.1% (2012). The share of out-of-pocket expenditure is 37.3% (2012) and the health workforce density is 31.9 physicians and 29.3 nurses and midwives per 10 000 population (2013).

The public health issues facing the country are presented in the following sections: communicable diseases, noncommunicable diseases, promoting health across the life course, health systems strengthening, and preparedness, surveillance and response. Each section focuses on the current situation, opportunities and challenges faced and the way forward. In addition, trends in population dynamics and in selected health indicators are analysed to provide policy-makers with evidence and forecasts for planning.

Communicable diseases

HIV

Tuberculosis

Malaria

Neglected tropical diseases

Vaccine-preventable diseases

Communicable diseases

- The national AIDS control programme has been maintained, with a focus on interventions targeting key populations at higher risk.
- A five-year national tuberculosis programme strategy has been elaborated, and the treatment protocols updated and disseminated. The eight tuberculosis centres have been upgraded in terms of space and basic equipment.
- A national vector mapping effort has been implemented.
- The routine immunization programme has been expanded to involve the private sector and nongovernmental organizations so as to ensure maximum vaccination coverage.

HIV

Overall HIV prevalence is low. Use of sterile injecting equipment among people who inject drugs is 83.0% (*1*). Routine testing is administered on 100% of blood collected (*1*).

There is a national strategic plan for HIV and AIDS. The HIV epidemic is steadily increasing among most-at-risk populations, namely men who have sex with men. All patients eligible for antiretroviral therapy as per the national protocol receive it free of charge through the national AIDS control programme. The national AIDS control programme has a focus on interventions targeting key populations at higher risk. Interventions include awareness-raising on HIV and sexually transmitted infections, especially in areas with high concentrations of Syrian refugees, provision of antiretroviral treatment (around 800 patients) and provision of voluntary HIV testing and counselling in more than 45 centres with a special focus on youth. Mitigation of the risks of HIV and sexually transmitted infections in the presence of the influx of the Syrian refugees, as well as financial sustainability for the provision of antiretroviral treatment, are some of the challenges the country faces. The country has a relatively low prevalence of hepatitis B and C, despite a slow but steady increase among high risk groups. Recently the country experienced a fourfold increase in incidence of hepatitis, accentuated by the large number of Syrian refugees living in informal settlements under very poor water and sanitation conditions. The government has allowed hepatitis A vaccination in the private sector, which reaches over half of the population, and has introduced hepatitis B vaccine in the national schedule with the intention to cover all children in the country. The Ministry of Public Health provides treatment of all chronic hepatitis B and C cases, and supports screening and vaccination of all dialysis patients. Challenges to the programme include financial sustainability for treatment of viral hepatitis and access to hepatitis A vaccine for the population.

Particular areas of focus should be on maintaining the national AIDS programme and reinforcing human resources capacity, expanding voluntary counselling and testing centres to focus on key populations at higher risk, continuing antiretroviral treatment provision, intensifying youth and school-based awareness of HIV and sexually transmitted infections, expanding sentinel centres for sexually transmitted infections, monitoring HIV prevalence in key populations at higher risk and updating information on awareness and practices related to HIV and sexually transmitted infections risks.

Tuberculosis

The tuberculosis-related mortality rate is estimated at 0.9 per 100 000 population (*2*). A total of 689 detected tuberculosis cases were reported in 2013, of which 248 were new sputum smear-positive cases (*2*). The treatment success rate for new and relapsed cases registered in 2012 was 76.0% (*3*). Drug-resistant tuberculosis is estimated at 1.1% among new cases and 29.0% among previously treated cases (*2*).

The caseload of the national tuberculosis programme has increased by approximately 30%, attributed mainly to Syrian refugees. In fact, the initially higher tuberculosis prevalence among the Syrian population, coupled with poor living conditions (crowding, poor nutrition, informal tented settlements) of the refugees in the country, has increased the incidence of tuberculosis. Accordingly, the national tuberculosis programme has been reinforced in terms of human resources, availability of medications, and capacity to monitor prevalence and incidence as well as treatment (reinforced directly observed treatment, short-course implementation). A five-year national tuberculosis programme strategy was elaborated, and the treatment protocols have been updated and disseminated. The eight tuberculosis centres have been upgraded in terms of space and basic equipment. Some of the challenges faced include: mitigation of the risks of tuberculosis in the presence of a large refugee population living in suboptimal conditions; financial sustainability of provision of medications; and subregional tracking of cases, noting that refugees and displaced people are quite mobile within the country and across borders.

Priority areas are reinforcing the human resources capacity at the national tuberculosis programme, maintaining directly observed treatment and upgrading the national tuberculosis programme capacity in trends monitoring and reporting, with linkages to related programmes at the Ministry of Public Health, such as HIV and communicable diseases.

Malaria

The country is considered to be a low burden and low risk country for malaria. Total confirmed malaria cases increased from 55 in 2003 to 115 in 2012, of which 100% were imported (*4*). In 2013, among the confirmed cases, 54.8% were *Plasmodium falciparum* and 2.6% were *P. vivax* (*4*).

Local transmission of malaria has been eradicated for more than 70 years despite the presence of anopheles fly in the country. However, due to the large Lebanese diaspora in African countries, and their frequent travel to Lebanon, cases of malaria are still observed annually. In 2014, imported malaria cases were detected, with the majority due to *P. falciparum*, an increasing trend in comparison with previous years. The Ministry of Public Health provided medications for these reported cases. Preventing local transmission of malaria is a key challenge.

Strong vigilance for monitoring local transmission, raising awareness among travellers to endemic areas and providing updated information for public and private health professionals for diagnosis and proper treatment of imported malaria cases are crucial.

Neglected tropical diseases

The country was certified free of dracunculiasis in 1998, but is still endemic for canine leishmaniasis (*5*).

The Syrian crisis and refugee influx introduced cutaneous leishmaniasis, known to be highly prevalent in the Syrian Arab Republic but rare in Lebanon despite the presence of the vector (sand fly). A national vector mapping effort has been implemented and 12 *Leishmania* clinics established with meglumine antimoniate (Glucantime) provided by WHO to enable adequate diagnosis and treatment; vector control and sanitation awareness have been intensified, which has limited further spread of the disease.

The focus should be on maintaining leishmania clinics and the provision of medications, monitoring local transmission of cutaneous leishmaniasis and coordinating with related stakeholders for vector control.

Vaccine-preventable diseases

Immunization coverage among 1-year-olds increased between 2011 and 2013 for DTP3 from 95.0% to 98.4% and for poliomyelitis from 96.0% to 99.8%; similar improvements have been made in measles coverage from 98.0% to 99.0% (*6*). In 2013, hepatitis B (HepB3) vaccine coverage among 1-year-olds was 98.0% (*6*).

Although national vaccination coverage is acceptable, by the end of 2014, some districts had suboptimal levels of coverage, especially those with large Syrian refugees/displaced people. Important efforts have been made to reinforce the national routine immunization programme, including involving the private sector and nongovernmental organizations in order to ensure maximum vaccination coverage. Routine vaccination at primary health care level has been significantly reinforced in terms of cold chain and vaccine availability. Several national poliomyelitis immunization campaigns have been implemented to mitigate the risk of outbreaks posed by the presence of large numbers of Syrian refugees. A large measles outbreak occurred in 2013, which was curbed by a national vaccination campaign. At the end of 2014, a localized mumps outbreak occurred affecting both Lebanese and Syrian children and young adolescents in the areas most congested with Syrian refugees. Targeting under-covered areas remains a challenge.

Significant efforts are needed to monitor and improve vaccination coverage with a focus on low coverage districts and to expand provision of vaccines at primary health care level with a focus on underserved areas.

Noncommunicable diseases

Noncommunicable diseases

Mental health and substance abuse

Violence and injury

Disabilities and rehabilitation

Nutrition

Noncommunicable diseases

- The early detection and management of noncommunicable diseases has been integrated in primary health care to include 150 primary health care centres.
- A national mental health programme has been established to expand and reinforce mental health services and advocacy.
- Social services are widely spread across the country and a large nongovernmental organization network is active in advocating for the rights of the disabled.
- Nutrition screening is currently integrated in the package of services at primary health care level and severe malnutrition treatment centres are established and functional in five hospitals.

Noncommunicable diseases

The burden of noncommunicable diseases is high, accounting for 84.9% of all deaths. Cardiovascular diseases account for 47.1%, cancers 21.7%, respiratory diseases 4.2% and diabetes mellitus 3.7% of all deaths (*7*). As a result, 12.0% of adults aged 30 to 70 years are expected to die from one of the four main noncommunicable diseases (*8*). Around 28.3% of adolescents (13–15 years of age, 38.9% boys, 19.4% girls) have ever smoked cigarettes, while 68.6% live in homes where others smoke cigarettes in their presence (*9*), and adult per capita consumption of alcohol is 2.4 litres of pure alcohol (*10*). The prevalence of insufficient physical activity in adolescents is 84.0% (11–17 years of age, 78.2% boys, 88.2% girls) and the age-standardized prevalence is 36.6% (31.0% males, 42.3% females) (*11*). Raised blood pressure affects 28.8% of the adult population above 18 (32.9% males, 25.1% females), while obesity affects 27.4% (25.8% males, 29.0% females) (*8*). All 11 essential medicines for treatment of noncommunicable diseases are available in the public health sector.[1]

Based on a national strategy elaborated in 2011, the early detection and management of noncommunicable diseases has been progressively integrated at primary health care level to include 150 primary health care centres. This has been coupled with the updating of the clinical management guidebook and implementation of a set of training activities targeting general practitioners and primary care physicians across the country. The country has also observed steep increases in cancer incidence; the most common cancers for males are lung, prostate and bladder and for females are breast, colorectal and lung. All patients with cancer who are uninsured can be treated at the expense of the Ministry of Public Health free of charge, based on national protocols updated every 3 to 5 years. Medications for chronic conditions are available at a low subsidized cost in the primary health care network, as are care and medications for catastrophic illnesses including cancer, renal

[1] WHO Regional Office for the Eastern Mediterranean, unpublished data, 2013.

failure, open heart surgery and rare diseases. The cancer registry has been upgraded in terms of human resources and capacity to analyse data. Despite the issuing of the tobacco law in 2012, its implementation remains poorly enforced. Moreover, the law needs to be further amended to include regulations regarding pricing and smuggling control. Tobacco smoking prevalence among adults is one of the highest in the Region, especially among females. Nongovernmental organizations play an important role in advocacy, awareness and dissemination of information. A coronary angiograms and angioplasties registry has been established, housed at the Lebanese Society of Cardiology. A cerebral vascular accident registry, supported by WHO and the American University of Beirut, has been established in collaboration with the Ministry of Public Health. Challenges include reducing the burden of noncommunicable diseases and reinforcing early detection and prevention components of care, as well as ensuring the financial sustainability of programmes. In the case of tobacco, reducing passive smoking and prevention of smoking initiation among youth remain challenges.

More emphasis is needed on noncommunicable diseases among the elderly. Further efforts are needed to: expand the initiative to cover all primary health care centres within the Ministry of Public Health network; monitor management outcomes; evaluate the cost-effectiveness of the initiative; and establish a national programme at the Ministry of Public Health. Focus should also be placed on integrating the cancer programme within the revised Ministry of Public Health organogram (noncommunicable diseases umbrella programme) and retention of its staff, monitoring cancer trends, prevalence and quality of care, and reinforcing awareness and early detection programmes. There is a strong need to strengthen enforcement of tobacco control, with a focus on community and nongovernmental mobilization and advocacy for regulations, as well as to increase financial resources and staffing to support the programme. In addition, funding is required to sustain the coronary angiograms and angioplasties registry and the cerebral vascular accident registry.

Mental health and substance abuse

Neuropsychiatric disorders are estimated to contribute 14.5% of the burden of diseases (*12*) and the suicide rate is estimated at 0.9 per 100 000 per year (*13*).

Based on the pressing need to address mental health conditions aggravated by the Syrian crisis, a mental health unit was established at the Ministry of Public Health within the primary health care department in 2014. The Mental Health Gap Action Programme has been progressively introduced at the level of primary health care to cover 75 centres in total, and the assessment instrument for mental health systems has been updated to provide more accurate information on services related to mental health. In 2014, the essential medications list was updated to include additional neuropsychiatric medications, in line with the requirements of the Mental Health Gap Action Programme. The country has initiated the establishment of a national mental health strategy for 2015–2020. Challenges

include reducing the burden of mental health, ensuring the financial sustainability of the programme and ensuring the rights of people with mental health conditions.

More focus is needed on integrating the mental health unit within the revised Ministry of Public Health organogram (noncommunicable diseases umbrella programme) and retaining its staff, monitoring trends, prevalence and the quality of care, ensuring continuous availability of medications at primary health care level and establishing a referral system.

Violence and injury

The percentage of deaths caused by injuries in 2012 was 9.1%. Of this, unintentional injuries accounted for 82.2% (53.2% due to road traffic injuries and 34.6% as a result of falls) and intentional injuries accounted for 17.8% (58.2% collective violence and legal intervention and 29.0% interpersonal violence) (*7*). In 2010, the estimated road traffic fatality rate was 22.3 per 100 000 population (*14*). For post-injury trauma care, there is a universal emergency access telephone number and 50–74% of seriously injured people are transferred by ambulance (*14*).

Specialized national emergency care training is available for both doctors and nurses. Laws on key road safety risk factors exist but need further strengthening. The road traffic law was revised in 2014 and came into effect in April 2015. Challenges include fragmented information systems, reflected in the gap between estimates and reported information, reducing the real burden of injuries.

Injury surveillance and vital registration systems need to be strengthened with cross-validation with other data sources, including the Ministry of Interior and Municipalities. Coordination between the individual ministries and departments concerned with road safety needs strengthening and institutionalization. Strengthening emergency transportation services is a priority for the Ministry of Public Health over the next five years. In addition, emphasis needs to be placed on reinforcing the new traffic law and improving data on domestic injuries.

Disabilities and rehabilitation

Disability prevalence is 2.0% (*15*). Age-specific disability prevalence is highest among those aged 65 years or above (5.6%) and lowest among those aged 0–14 years (1.1%) (*15*). Of the different types of disabilities or difficulties, it is estimated that those related to physical or locomotor are 59.9%, visual 16.4%, mental deficiencies 22.3% and hearing and speech 22.4% (*15*).

The UN Convention on the Rights of Persons with Disabilities was signed in 2007. The National Committee for the Affairs of the Disabled, as of 1993, is the national coordination

body, chaired by the Minister of Social Affairs, with representation from persons with disabilities. The Ministry of Social Affairs established a special programme for the disabled that facilitates access to health and social services. The Ministry of Public Health partially covers tertiary health care and some chronic debilitating disabilities. Social services are widely spread across the country and a large nongovernmental organization network is active in advocating for the rights of the disabled. The general overarching national disability law is the Law on the Rights of Disabled Persons (2000). Although rehabilitation services are widely available across the country, they are mostly located in private clinics, which limits access by the most vulnerable. Challenges include the lack of required national financial resources and in some instances the required qualified human resources, inadequate data systems, the insufficient level of effective collaboration between different sectors and the negative implications of conflicts in neighbouring countries which pose an additional burden to the health system with the constant influx of refugees.

The adoption of the WHO global disability action plan 2014–2021 is an opportunity for strengthening health sector action on disability within the broader multisectoral circle, building on existing national efforts.

Nutrition

The estimated prevalence of various conditions due to malnutrition in children under 5 years of age is summarized in the following indicators: 4.2% underweight, 6.6% wasting, 2.9% severe wasting, 16.5% stunting, while 16.7% overweight (*16*). Exclusive breastfeeding of children under 6 months of age is 15% and low birth weight is 7.7%.[2]

The country is facing new challenges due to a rapid nutrition transition, the repercussions of global food price shocks and political turmoil in the region. The prevalence of obesity has almost doubled in a decade in all age groups, and the associated economic burden is growing. Although few data are available related to micronutrients, there is growing evidence of a high prevalence of anaemia among pregnant women and of vitamin D deficiency, particularly among women. Since 1996, all locally-produced salt is iodized, as a strategy to reduce the prevalence of goitre. The Ministry of Public Health, with WHO support, has carried out studies and provided technical advice on salt fluoridation in order to prevent dental caries; however, fluoridation is not yet implemented despite the approval of national legislation. Nutrition screening and surveys targeting Syrian refugees since 2012 indicate that the risk of malnutrition among the refugees is low. Nevertheless, nutrition screening is currently integrated in the package of services at the level of primary health care and severe malnutrition treatment centres are already established and functional in five hospitals. The Ministry of Public Health issued a recent decree mandating exclusive breastfeeding at the hospital level as part of Baby-friendly Hospital Initiative. However, implementation remains low and powdered formula is still widely advised by physicians.

[2] Ministry of Public Health, unpublished data, 2014.

The emergency nutrition programme needs further support and resources to handle the Syrian refugee crisis. In addition, promotion of exclusive and continued breastfeeding needs advocacy and programme support. Expanding malnutrition screening at primary health care level and monitoring micronutrient deficiencies among high risk groups are also needed.

Promoting health across the life course

Reproductive, maternal, newborn, child and adolescent health

Ageing and health

Gender, equity and human rights mainstreaming

Social determinants of health

Health and the environment

Promoting health across the life course

- The national school health programme has provided a national benchmark for the school healthy environment initiative, whereby all public schools and a number of private schools were surveyed for a set of indicators. Selective corrective measures are progressively being implemented.
- The elderly benefit from the hospitalization scheme of the Ministry of Public Health as a "social safety net" and insurer of the last resort under which the chronic disease medicine programme assists low-income households in securing medications.
- The country recently passed a national law against domestic violence and several nongovernmental organizations are active in the field of gender-based violence.
- The government endorsed the WHO regional environmental health strategy and framework for action 2014–2019, and will initiate a national multistakeholder process to develop a strategic environmental health framework for action in 2015–2016.

Reproductive, maternal, newborn, child and adolescent health

The maternal mortality ratio declined between 2011 and 2013 from 25 to 18 maternal deaths per 100 000 live births (*6*) and the under-5 mortality rate was 10 deaths per 1000 live births in 2009 (*17*).[3] The leading causes of under-5 mortality are acute respiratory infection (7.0%), prematurity (30.0%), intrapartum-related complications (11.0%) and congenital anomalies (23.0%) (*20*). The leading causes of maternal mortality are postpartum haemorrhage, eclampsia and sepsis.

The country has achieved the targets of Millennium Development Goals 4 and 5 for reducing child and maternal mortality, respectively. This is the result of considerable efforts, including updating the primary health care reproductive health package, strengthening 80 primary health care centres to provide an adapted and comprehensive reproductive, newborn and child health package and implementing a standardized neonatal care and resuscitation training programme and emergency obstetric care across the country to improve the quality of care. In 2011, in an attempt to activate a notification system at the national level to get accurate data on maternal mortality, the Ministry of Public Health started a maternal and neonatal mortality surveillance system, which includes active collection of maternal

[3] UN estimates for the maternal mortality ratio declined between 1990 and 2015 from 74 to 15 maternal deaths per 100 000 live births (*18*) and the under-5 mortality rate decreased from 33 to 8 deaths per 1000 live births (*19*).

and neonatal data from (both public and private) hospitals at the national level. Once a maternal death is identified through the reporting system, a national committee on safe motherhood, originally designated by a ministerial decree in 2004 and expanded by another decree in 2009, designates an independent expert from the Lebanese Society of Obstetrics and Gynecology to investigate the cause of death.

The national school health programme, operated jointly by the Ministry of Public Health, Ministry of Education and Higher Education and WHO, has established routine annual screening of students and implemented thematic health awareness-raising through school health clubs. The programme provides a national benchmark for the healthy school environment initiative, whereby all public schools and a number of private schools have been surveyed for a set of indicators. Selective corrective measures are being progressively implemented. The national integrated management of childhood illness guidebook has been updated and disseminated through training targeting 180 primary health care centres. Over the past 17 years, the Ministry of Public Health has supported a mother and child initiative known as the Wadi Khaled initiative in one of the poorest areas in the north of the country. This initiative, operated by a national nongovernmental organization, provides outreach services to poor uninsured women, offering a standard package of antenatal and post-natal care, providing referrals to hospital for delivery at the expense of the Ministry of Public Health and following-up infants up to 18 months of age to monitor their adequate development and vaccination. The Wadi Khaled initiative has been successfully reproduced in the Tripoli area. The Ministry of Public Health has also revised the licensing criteria for nurseries and initiated a monitoring system for the quality of services, in collaboration with the syndicate of owners of nurseries.

Building on these efforts, there is a need to monitor quality of reproductive health and maternal and child health care at the primary health care level, expand the Wadi Khaled outreach maternal and child health initiative to other underserved areas, support and further expand the neonatal and perinatal network, monitor obstetric and neonatal care quality and morbidity outcomes, and support the national school health programme.

Ageing and health

Life expectancy at birth rose by 14 years in the past two decades reaching 81 years in 2012 (*6*). In 2010, the population above 60 years represented 9.6% of total population (*6*).

The elderly health profile has changed considerably over the past four decades with chronic and degenerative disorders replacing communicable diseases as the leading causes of mortality and morbidity. Obesity levels are alarming, particularly among older women. Around half of the older populations have no insurance coverage. However, they benefit from the hospitalization scheme of the Ministry of Public Health as a social safety net and insurer of the last resort under which the chronic disease medicine programme assists low-

income households in securing medications. The Ministry of Public Health and WHO currently support the Center for Studies on Ageing, a nongovernmental organization that generates research for policy support. Most social support to the elderly is provided through the Ministry of Social Affairs. Challenges include the lack of a clear and comprehensive government policy and old-age pension plan for most retired older adults, pressures on the health care system, the lack of accurate comprehensive data, the high cost of care, with a heavy reliance on curative high-tech approaches, and the restriction of the nongovernmental sector to primary care or institutionalized older people.

There is a need to update existing social security and welfare legislation, introduce a chronic model of care (promotion, prevention, screening, checkups, monitoring and follow-up), develop an integrated system of care based on primary health care but connected to specialist and hospital care, provide incentives for families and caregivers of older disabled adults (such as reducing taxes and the cost of basic services), and strengthen the mainstreaming of ageing and health-related issues in multisectoral economic, social and health development processes.

Gender, equity and human rights mainstreaming

Female education, especially in higher education, is equal to male education. The country recently passed a national law against domestic violence, and several nongovernmental organizations are active in the field of gender-based violence. The government has made substantial efforts to improve health service coverage but certain issues negatively impact on accessibility, acceptability, affordability and quality of health services. Large numbers of uninsured persons are elderly, unemployed and low-income individuals mostly in semi-rural areas. Along with migrant workers, there is a growing influx of refugees from Palestine, Iraq and the Syrian Arab Republic, who have with limited access to affordable and quality services, while creating an additional burden on the public health sector. The country has around 250 000 migrant workers, a significant proportion being females from east and south-east Asia, with limited access to basic rights and often poor employment conditions. Migrant workers access the Ministry of Public Health primary health care services, and tuberculosis and HIV programme, and are mandated to have private insurance for hospitalization. Syrian refugees can only access health services if they are able to pay, or if covered by the Office of the United Nations High Commissioner for Refugees (UNHCR) assistance. Palestinian refugees' rights to work and property remain limited. Palestinian refugee health services are provided through the UNRWA health system that has a referral system linked to the national system. Challenges include insufficient resources, which is further complicated by the influx of refugees which severely strains the health system. This needs to be taken into account when working to integrate gender and equity in health programmes for host and incoming populations.

There is a need to develop a strategy for universal health coverage particularly for vulnerable groups. The role of the public health sector needs to be strengthened with scaled up action to reduce inequities in distribution of health resources between the rural and urban areas. A human rights-based approach needs to be adopted by all those organizations working with vulnerable populations, with review of existing legislation and support to translate policies into actions.

Social determinants of health

The *Human development report 2014* ranked the country 65 out of 187 countries across the world on the human development index (*21*). The population at poverty level is 28.6% (2004) (*22*). Access of the rural population to improved water sources has remained constant at 100% (*20*). In 2010, the age group 0–24 years accounted for 46.7% of the total population (*6*). Adult literacy rates (2007) are 89.6% (*23*), while overall unemployment is 8.9% and for youth (15–24 years) 22.8% (*22*).

Two cities, Tripoli and Saida, have engaged in the Healthy Cities initiative, focusing on improving selected determinants of health (wastewater, tobacco-free premises, etc). The Ministry of Public Health provided support to a national poverty study. In 2012, a national review of social determinants of health supported by WHO noted the existence of disparities across gender, *mohafazat* (governorate) and mother's educational level related to different issues including infant mortality rate, anthropometric measures, health status, suffering from chronic diseases or disability, and receiving medical care. Moreover large disparities were found between governorates concerning sources of drinking-water and means of sanitation. The Ministry of Public Health has initiated a number of interventions to address social determinants of health and disparities across gender, income, educational level and *mohafazat* including those related to ensuring universal health coverage. However, the shortage of resources is an issue. This is further complicated by the added load of refugees. The chaotic spread of informal tent settlements of Syrian refugees, with suboptimal water and hygiene systems, means that access to safe water is becoming a severe challenge and it was estimated in 2014 that some of the population will be driven into poverty due to the negative socioeconomic impact of the Syrian crisis on the country.

These factors need to be taken into consideration when addressing the country's capacity to effectively address social determinants of health among the host and incoming populations. There is a need to continue advocating for the integration of social determinants into the planning undertaken by health and other sectors in order to sustain and scale up actions.

Health and the environment

It is estimated that 3000 people die annually as a result of environmental factors and the percentage of disability-adjusted life years attributable to the environment is estimated at 17.0% (*24*). Access to improved drinking-water is 100% (*20*) and there are 18.3 deaths annually (2012) due to inadequate water, sanitation and hygiene provision (*25*). It is estimated that 0.01% of the population uses solid fuels (biomass for cooking, heating and other usages) (*26*).

Although annual precipitation is adequate, water availability remains a serious national concern owing to significant losses in public water distribution networks and the high level of water pollution. While all households are connected to a public/private water network, about 80% suffer delivery failure. Most households in rural areas do not have access to public sewage networks, unlike urban dwellings. Solid waste management remains a crucial environmental problem, with little progress over the past decade. The advent of additional refugees from the Syrian Arab Republic constitutes an additional strain on water availability and safety, and on the waste disposal system. The health care waste management system remains suboptimal despite the efforts made by the government, supported by WHO and key stakeholders, to establish a national system for health care waste management. Air pollution is not properly monitored and is poorly reported. However, remotely sensed data show high levels of particulate matter in the air. The government has been working on strengthening national capacity in environmental health preparedness and response to emergencies, and in environmental health risk assessment and water sanitation. Challenges include raising awareness among the population on environmental risks, ensuring adequate resources for the water, sanitation and hygiene programme, especially in informal tented settlements, and ensuring the collaboration and coordination of various government institutions on national environmental health issues.

The government has endorsed the WHO regional strategy and framework for action on health and the environment 2014–2019. The next step is to initiate a national multistakeholder process to develop a strategic environmental health framework for action in 2015–2016.

Health systems

National health policies, strategies and plans

Integrated people-centred health services

Access to medicines and health technologies

Health systems, information and evidence

Health system

- A national dialogue was launched a few years ago and with the global engagement towards achieving universal health coverage, and the government assumed full responsibility to ensure funding. A national primary health care accreditation system is progressively being implemented and a comprehensive basic package of services has been defined and costed.
- A national plan for e-health has been established.

National health policies, strategies and plans

The country's national health planning cycle is addressed in their national health policy strategy and plan 2007–2009. Total expenditure on health per capita at international exchange rate in 2012 was US$ 751.0 (*27*). General government expenditure on health increased from US$ 170.0 per capita in 2005 to US$ 320.1 in 2013 (*28*). Total expenditure on health as a percentage of the gross domestic product in 2012 was 7.17% (*29*). In addition, the share of out-of-pocket spending in 2012 was 37.3% (*29*). Total expenditure on health from external sources in 2012 was 0.47% (*29*).

The national health policy identifies health sector priorities which include service delivery reform, better regulation and stronger partnership with the private sector. It underscores the importance of reinforcing information system transparency and accountability. The national health policy also addresses immediate interventions such as developing long-term vision and strategy, harnessing the role of the private sector and strengthening the role of the Ministry of Public Health as the principal steward.

The decision to provide universal health coverage to national residents is a considerable step towards reform at the social level. A national dialogue was launched a few years ago, and with the global engagement towards achieving universal health coverage, the government assumed its full responsibility to ensure funding. Current dialogue is focusing on how to ensure minimal adverse repercussions and the highest possible benefit from each fiscal operation. The role of the Ministry of Public Health in defining the targets of this coverage, in programming it, establishing its machinery and setting its priorities is clear and accepted by all. The Ministry of Public Health is leading the production of national health accounts, with some challenges related to the willingness of other stakeholders to share information, in addition to incompleteness and unstandardized data collection tools. A new system of contracting with the private sector is being implemented based on performance and quality standards.

The government needs to purse the institutionalization of health accounting and undertake a full-fledged assessment of its health financing system. The two should help the government

develop and implement an adequate health financing strategy and guide its way to reform the health financing system to pursue universal health coverage.

Integrated people-centred health services

The health workforce density from 2011 to 2013 remained almost the same for physicians (from 32.0 to 31.9 per 10 000 population), while for nurses and midwives it increased from 27.2 to 29.3 per 10 000 population[4], for dentists it decreased from 14.7 to 12.6 per 10 000 population, and for pharmacists it increased from 15.7 to 16.8 per 10 000 population (*6*). Heath service delivery data indicate the density of health posts has decreased from 2010 to 2013 (from 2.79 to 2.45 per 100 000 population) (*30*). The number of mental hospitals in 2011 was 3, or 0.07 per 100 000 population (*31*). There are 34.5 hospital beds per 10 000 population (2013) (*6*) and an estimated 1.41 psychiatrists working in the mental health sector per 100 000 population (2011) (*32*).

The Ministry of Public Health is engaged in the process of expanding the primary health care network to include around 50 new primary health care centres each year, eventually enrolling all 900 primary health facilities across the country. The objective is to increase access to subsidized basic health services in the most underserved areas. A national primary health care accreditation system is progressively being implemented, and a comprehensive basic package of services has been defined and costed. This is coupled with a referral system anchored in the public health system. Standards of care have been updated, standard operating procedures developed and disseminated in line with accreditation requirements, and the necessary equipment and training have been provided. A law for autonomy of public hospitals has been developed and enacted and a health financing model is being piloted based on a prepaid primary health care package and referral system to public hospitals when needed. Access to primary health care and hospital beds is high; however, the country suffers from a severe imbalance in human resources for health, with a surplus of medical doctors and a severe shortage of nurses, paramedical staff and health managerial staff. The resources are unequally distributed, favouring larger cities. As noted, a new system of contracting with the private sector is on its way to implementation, based on performance and quality standards.

Special attention should be given to expanding the accreditation of primary health care, evaluating and expanding the primary health care revised package of services within the new financing modality, and monitoring quality of care at primary health care level

Access to medicines and health technologies

The Ministry of Public Health has updated the national guidelines on good manufacturing practices and reinforced its inspection capacity. In addition, a review of pricing has

[4] The figure appearing in the sourced publication differs to the one reported in this text due to a printing error. The correction was furnished by the Statistics Department, Ministry of Public Health, on 13 January 2016.

been implemented, along with updating the list of essential and chronic medicines. A standardized system for eligibility criteria for support in terms of catastrophic illness medications (cancer, haemophilia, renal failure, rare diseases) supported by the Ministry of Public Health has also been established. In addition, the Ministry of Public Health has developed a national strategy for medical devices, with a short-term plan of action whereby regulations and standards are elaborated. The Ministry also has a subsidized programme for chronic diseases that provides medications at the level of primary health care for the poor and uninsured. The programme has been operated by the local Young Men's Christian Association since 1998. It provides medications based on a periodically updated list to 440 primary health care centres across the country. Vaccines are provided free of charge in more than 500 primary health care centres and dispensaries, based on a national vaccination calendar updated periodically in partnership with scientific societies. Reinforcing the regulatory role of the Ministry of Public Health and ensuring financial sustainability for chronic disease medications, especially in light of the influx of Syrian refugees, are some of the challenges faced by the country.

Areas of focus should be on reinforcing the pre-marketing and post-marketing inspection capacity of the Ministry of Public Health, reinforcing warehouse and drug dispensing centre decentralization, assessing cost-containment options for the catastrophic illnesses programme and expanding capacity-building for monitoring medical devices.

Health systems, information and evidence

In order to reduce fragmentation of information and ensure the timely flow of essential health information at all health care levels, as well as between various health care stakeholders, a national plan for e-health has been elaborated. Pilot initiatives have been implemented and need to be further expanded. In addition, databases for human resources and health facilities were updated in 2013. A comprehensive assessment of civil registration and vital statistics has been completed and has generated some short-term recommendations that address the standardization and revision of death and birth certificates, as well as the flow of information between the Ministry of Interior and the Ministry of Public Health to determine cause of death. Improving coordination and collaboration with various key ministries for information sharing is one of the challenges faced.

Areas that require further focus are: upgrading the civil registration and vital statistics, including revision of the reporting forms, automation and quality control; expanding the e-health plan; capacity-building on the international classification of diseases coding; and updating the health-related databases.

Preparedness, surveillance and response

Alert and response capacities

Epidemic and pandemic-prone diseases

Emergency risk and crisis management

Food safety

Poliomyelitis eradication

Outbreak and crisis response

Preparedness, surveillance and response

- The Ministry of Public Health has actively expanded the early warning and reporting systems, including providing logistics and training and updating guidelines, as well as establishing water laboratories to monitor water quality across the country.
- The district health information system has been further developed along with revised standard operating procedures which will allow faster monitoring of, and response to, potential hazards and outbreaks.
- The *qada* health units have been reinforced with additional primary health care staff. National contingency plans for various scenarios have been developed and updated periodically, with selected contingency stocks made readily available with the support of WHO.
- Food laboratory capacity is in place that is capable of analysing most common food chemical and microbiological hazards.

Alert and response capacities

The government has asked for a second extension (to June 2016) to meet its International Health Regulations (IHR) 2005 obligations. Progress in IHR implementation has been significant.

A national crisis coordination structure is in place. Preparations are under way to fully meet the requirements under IHR. The legal framework has been developed and has progressed through the ratification processes of Parliament. National plans for pandemic and epidemic containment have been elaborated and periodically updated. Two health units have been established at two different points of entry (Tripoli and Beirut) as part of health monitoring at the borders under IHR. Challenges include trans-border control and population movement in the context of the Syrian crisis, as well the ratification of the legislation and its implementation in the current political conditions.

Focus should be given to: finalization of regulations related to IHR; continuation of capacity-building on the standard operating procedures and IHR at points of entry; and reinforcement of multisectoral collaboration for IHR implementation.

Epidemic and pandemic-prone diseases

The Ministry of Public Health has expanded its capacity in the early warning and response network, both in terms of human resources (centrally and at district level), and in terms of capacity in communication, reporting, surveillance and response. In addition, logistics and training have been expanded and guidelines updated, and water laboratories established to monitor water quality across the country. The district health information system has been further developed along with revised standard operating procedures which will allow faster monitoring of, and response to, potential hazards and outbreaks. The national system for detection and response to health threats remains underperforming owing to the overwhelming presence of private sector facilities that are not necessarily part of the national health system. The presence of large number of Syrian refugees among host communities across the country has transformed the public health surveillance system for detection and response to health threats. The country remains vulnerable to West Nile fever and diseases that are predominantly vector-borne. While national capacities for early warning surveillance are being improved through a multitude of initiatives, including pandemic influenza preparedness framework-related activities, progress needs to be made on building a national network of efficient public health laboratories, the absence of which remains a considerable gap in the public health system of the country. Nevertheless, the Ministry of Public Health, with support of WHO, has established a national severe acute respiratory infection (SARI) monitoring system in 10 sentinel hospitals across the country and a national influenza reference laboratory at the main university public hospital in Beirut. The limited capacity of Ministry of Public Health surveillance and response teams in the field and reaching the highly mobile Syrian refugees and other displaced populations remain challenges.

Strategic areas in which the country should invest include establishing a national programme for control of influenza and antimicrobial resistance, building capacities for preventing nosocomial infections and ensuring the involvement of the private health sector in building resilience of the health system for surveillance, preparedness and response to epidemic and pandemic-prone diseases.

Emergency risk and crisis management

The country is susceptible to both natural and man-made disasters that cause a significant loss of life, livelihoods and infrastructure, reversing development gains. The annual loss attributable to natural disasters (based on data from 1994 to 2013), on average was 1.5 deaths, or 0.04 per 100 000 inhabitants; losses in million purchasing power parity were US$ 30.6 and losses to gross domestic product amounted to 0.07% (*33*).

Significant efforts have been made to improve national capacity on emergency risk and crisis management. As yet, the interventions remain fragmented and poorly coordinated. One main limitation is the absence of a dedicated team or unit at the Ministry of Public Health for emergency risk and crisis management. A national master plan for emergency preparedness and response has been developed by an interministerial committee reporting to the Prime Minister. The Ministry of Public Health, with support of WHO, developed the health component within this master plan. Seventeen hospitals have been reinforced to enable them to deal with mass casualties from all chemical hazards. The laboratory capacity in the university public hospital has been expanded. Over 200 health workers have been trained by WHO on a risk mitigation training package and on case and environmental management of casualties. A national level 2 microbiology reference laboratory has been established at the main university public hospital in Beirut, with provision of necessary equipment and training on decontamination and environmental management of chemical and biological hazards, as well as two isolation rooms. A level 3 biosafety laboratory is established at the Saint Joseph University in Beirut and supported by Mérieux NutriSciences laboratories. Ensuring multisectoral coordination and maintaining the early warning and response network operational capacity are of great importance and remain a challenge. The *qada* health units have been reinforced with additional primary health care staff. National contingency plans for various scenarios have been developed and updated periodically, with selected contingency stocks made readily available with the support of WHO.

At the national level, the Prime Minister's Cabinet has a dedicated cell for risk assessment and management and disaster risk reduction. Establishing a crisis management unit with a dedicated team at the Ministry, developing a national health preparedness medium-term plan and continuing capacity-building and simulation exercises on hazards across the country are of the highest priority.

Food safety

Food control services are regulated by several government agencies, which makes coordination and standardization difficult. The Ministry of Public Health investigates cases of foodborne disease reported by the epidemiology and surveillance unit and informs the related ministry for further action. The country has food laboratory capacity in place capable of analysing most common food chemical and microbiological hazards. However, this capacity is mostly in the private sector and there is no functional public health laboratory as such. Several attempts have been made to introduce new food laws. In 2014, the Ministry of Public Health accelerated its food inspection capacity, which incited other concerned ministries such as the Ministries of Tourism, Interior and Industry to join efforts to push through a revised food law. The Ministry of Public Health, with the support of WHO, is building the capacity of health inspectors. Challenges include ensuring political

commitment to sustain the inspection efforts, sufficient human and financial resources, and multisectoral cooperation.

There is a strong need to upgrade the food safety system, train staff and update the standard operating procedures for adequate food inspection, reporting and response.

Poliomyelitis eradication

The Ministry of Public Health, with support from WHO and United Nations Children's Fund (UNICEF), has decided to conduct house-to-house polio campaigns throughout the country in response to the outbreak in the Syrian Arab Republic and Iraq and the large influx of Syrian refugees to the country. Acute flaccid paralysis indicators improved in 2014 compared to 2013. The acute flaccid paralysis rate remained above 2 cases per 100 000 population under 15 years and the specimen' adequacy rate increased from 45.0% in 2013 to 70.0% in 2014. The routine polio immunization coverage has remained higher than 80.0% for the past five years as per WHO/UNICEF estimates (*34*). The country is hosting the largest concentration of Syrian refugees and thus presents increased vulnerability. As soon as the recent polio outbreak was announced in the Syrian Arab Republic, the Ministry of Public Health, with support from WHO, UNICEF and UNHCR, organized six polio national campaigns between November 2013 and November 2014. The coverage rate was around 99% of all children up to age five with oral polio vaccine. In each campaign, more than 500 000 eligible children were reached. The Ministry of Public Health adopted a strategy that included intensifying the routine vaccination through primary health care centres across the country and actively involving the private sector in vaccination campaigns. Challenges include ensuring vaccination of all high risk groups, particularly refugees, and enhancing the sensitivity of the surveillance system to early detect and effectively respond to any possible importation of wild poliovirus.

The focus should continue on ensuring vaccination of all high-risk groups, particularly refugees, and enhancing the sensitivity of the surveillance system to early detect and effectively respond to any possible importation of wild poliovirus.

Outbreak and crisis response

The pre-crisis population was estimated to be around 4.1 million (*6*). However, as of 2015, the country had received 1 070 189 Syrian refugees registered[5] with UNHCR (*35*), and an additional 765 651 nonregistered, displaced Syrians (*36*). As of July 2014, there were 449 957 registered (UNRWA) Palestine refugees, most of whom are residing in the country's 12 camps (*37*), of which 44 000 Palestinian refugees came from the Syrian Arab Republic in 2014 (*38*). It is now the highest per capita host of refugees in the world. The refugee influx

[5] A registered refugee in Lebanon will have required entry or stay documentation allowing for legal status in the country.

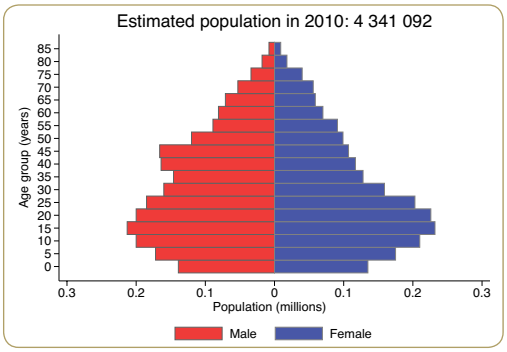
has tested the economic, political and social resilience of the country, and has strained public spending.

Over the past three years, the country has demonstrated an improved response to hazards and outbreaks. Based on a first assessment suspecting the presence of possible chemical injuries among Syrian refugees, the Ministry of Public Health promptly reacted, with the support of WHO, by designing and implementing a national training programme on risk mitigation. In addition, the hazards investigation for a potential anthrax attack in 2013 was successfully carried out by the national team, with an early alert and a rapid response for investigation and confirmation. With the recent outbreak of Middle East respiratory syndrome coronavirus, the Ministry of Public Health was able to promptly establish a severe acute respiratory infection and influenza-like illness surveillance system. It also developed an adapted guideline for case investigation and management, and immediately initiated training at health facility level, with the support of WHO. A district health information system was also established, linking primary health care centres, hospitals and schools, for a health dataset. A national guidebook covering 43 selected health conditions with potential outbreak risk has been updated and training initiated for health care workers. The country meets the target of demonstrating adequate response to an emergency from any hazard with a coordinated initial assessment and a health sector response plan within five days of onset. In late 2014, the government began scaling up its preparedness for Ebola virus disease by assessing and measuring their level of preparedness and readiness using the WHO assessment checklist and accordingly identifying critical gaps for improvement.

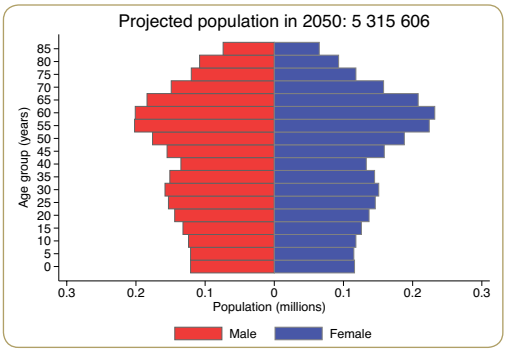
The focus should be on reinforcing the Ministry of Public Health response capacity centrally and at the *qada* level, as well as conducting periodic preparedness assessments and updating contingency plans.

Demographic profile

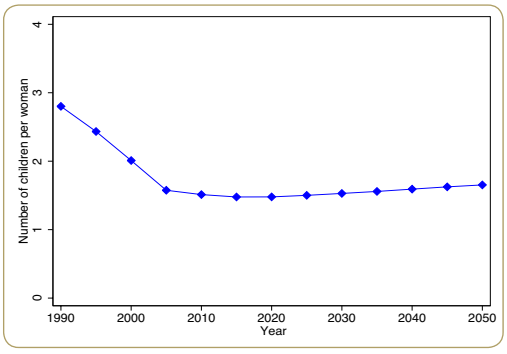
Population pyramid 2010



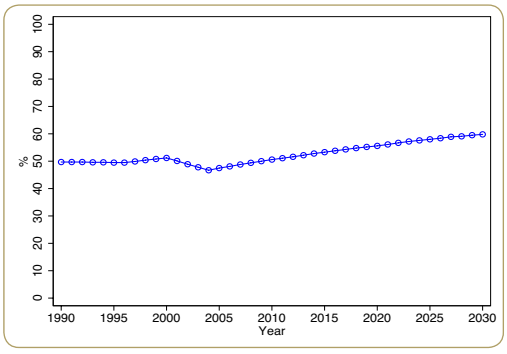
Population pyramid 2050



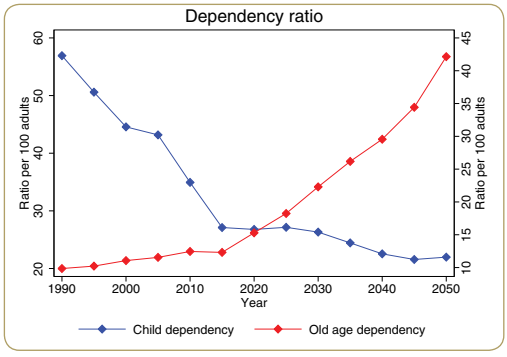
Total fertility rate



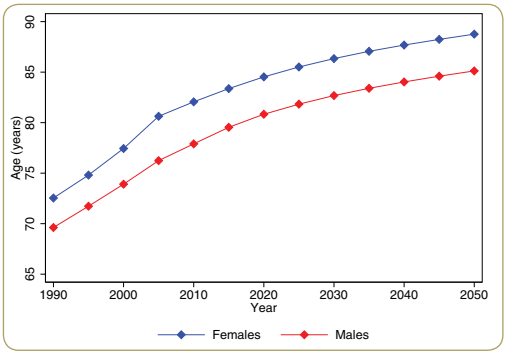
Need for family planning satisfied



Dependency ratio



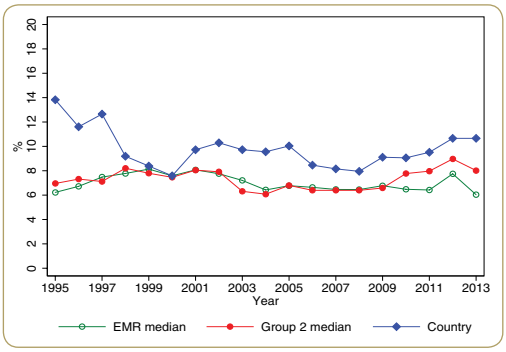
Life expectancy at birth



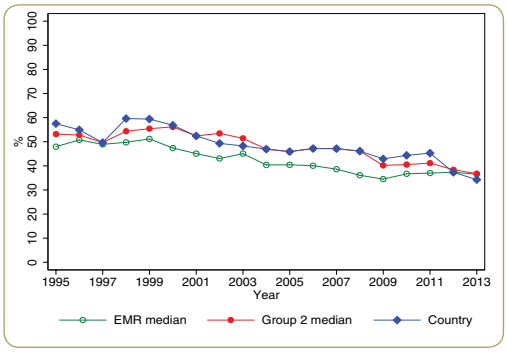
Source for all graphs: *(39)*

Analysis of selected indicators

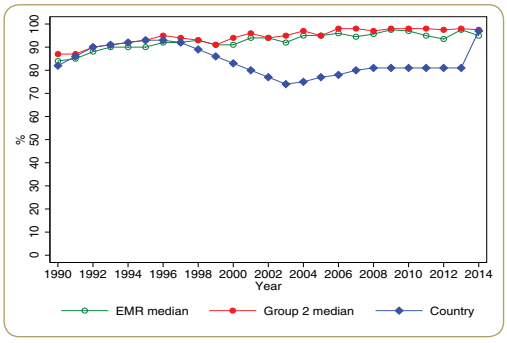
General government expenditure on health as % of general government expenditure (*28*)



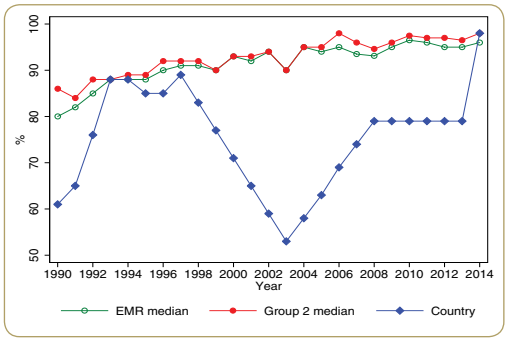
Out-of-pocket expenditure as % of total health expenditure (*28*)



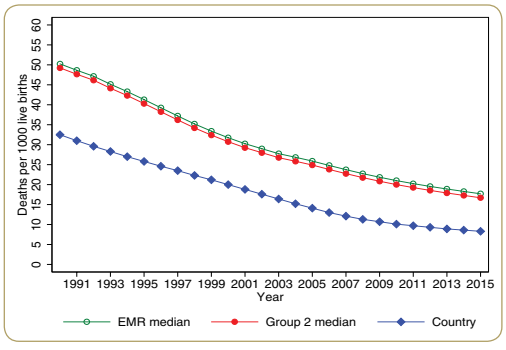
DPT3/pentavalent coverage among children under 1 year of age (%) (*40*)



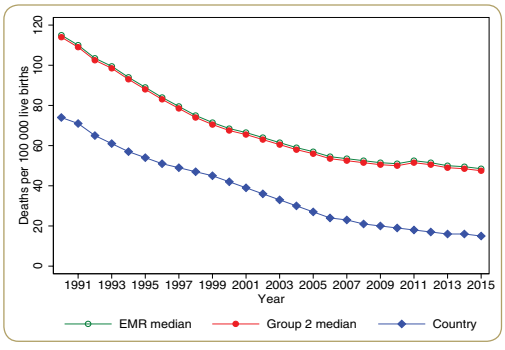
Measles immunization coverage (%) (*40*)



Under-5 mortality (per 1000 live births) (*19*)



Maternal mortality ratio (per 100 000 live births) (*18*)



References

1. UNAIDS Middle East and North Africa regional report on AIDS. Geneva: Joint United Nations Programme on HIV/AIDS (UNAIDS); 2011 (http://www.unaids.org/sites/default/files/media_asset/JC2257_UNAIDS-MENA-report-2011_en_1.pdf, accessed 3 February 2015).
2. WHO global tuberculosis database 2014. Geneva: World Health Organization; 2014 (http://www.who.int/tb/country/data/profiles/en/, accessed 25 March 2015).
3. Tuberculosis treatment success rate and treatment outcome by site and nationality 2014. Beirut: Ministry of Public Health; 2014 (http://www.moph.gov.lb/userfiles/files/Statistics/Tb-TreatmentOutcomes2014.pdf, accessed 22 December 2015).
4. Malaria in the Eastern Mediterranean Region 2013. Cairo: World Health Organization Regional Office for the Eastern Mediterranean; 2014 (http://applications.emro.who.int/dsaf/emropub_2014_EN_1778.pdf?ua=1&ua=1, accessed 2 April 2015).
5. Global health observatory data repository: Neglected tropical diseases. Geneva: World Health Organization; 2015 (http://apps.who.int/gho/data/node.main.A1629?lang=en, accessed 7 April 2015).
6. Ministry of Public Health. Statistical bulletin 2013. Beirut: Ministry of Public Health, European Union, World Health Organization, United Nations High Commissioner for Refugees; 2015 (http://www.moph.gov.lb/en/Pages/8/327/statistical-bulletins, accessed 22 December 2015).
7. Global health estimates 2014 summary tables: Estimated deaths by cause, sex and WHO Member State 2012. Geneva: World Health Organization; 2014 (http://www.who.int/healthinfo/global_burden_disease/estimates/en/index1.html, accessed 12 October 2014).
8. Noncommunicable diseases country profiles. Geneva: World Health Organization; 2014 (http://www.who.int/nmh/countries/en/, accessed 12 October 2014).
9. The Global youth tobacco survey 2011. Cairo: World Health Organization; 2012 (http://www.emro.who.int/images/stories/tfi/documents/GYTS_FS_LEB_2011.pdf?ua=1, accessed 12 October 2014).
10. Global status report on alcohol and health 2014. Geneva: World Health Organization; 2014 (http://www.who.int/substance_abuse/publications/global_alcohol_report/en/, accessed 12 October 2014).
11. Global status report on noncommunicable diseases 2014. Geneva: World Health Organization; 2014 (http://www.who.int/nmh/publications/ncd-status-report-2014/en/, accessed 11 March 2015).

12. Mental health atlas: 2011 country profiles. Geneva: World Health Organization; 2011 (http://www.who.int/mental_health/evidence/atlas/profiles/en/, accessed 1 April 2015).

13. Preventing suicide: a global imperative. Geneva: World Health Organization; 2014 (http://www.who.int/mental_health/suicide-prevention/world_report_2014/en/, accessed 12 October 2014).

14. Global status report on road safety 2013: supporting a decade of action. Geneva: World Health Organization; 2013 (http://www.who.int/violence_injury_prevention/road_safety_status/2013/en/, accessed 12 October 2014).

15. Disability in the Arab Region: An overview. Beirut: Economic and Social Commission for Western Asia; 2014 (https://www.unescwa.org/sites/www.unescwa.org/files/page_attachments/disability_in_the_arab_region-_an_overview_-_en_1.pdf, accessed 29 March 2015).

16. UNICEF-WHO-The World Bank. 2013 Joint child malnutrition estimates: levels and trends, 2014 revision. Geneva: World Health Organization; 2014 (http://www.who.int/nutgrowthdb/estimates2013/en/, accessed 31 March 2014).

17. Multiple indicator cluster survey Lebanon 2009. Beirut: Central Administration of Statistics, United Nations Children's Fund; 2010 (http://www.cas.gov.lb/images/Mics3/CAS_MICS3_survey_2009.pdf, accessed 22 December 2015).

18. Trends in maternal mortality: 1990 to 2015. Estimates by WHO, UNICEF, UNFPA, the World Bank and the United Nations Population Division. Geneva: World Health Organization; 2015 (http://www.who.int/reproductivehealth/publications/monitoring/maternal-mortality-2015/en/, accessed 28 November 2016).

19. Levels and trends in child mortality. Report 2014. Estimates developed by the UN Inter-agency Group for Child Mortality Estimation. New York: United Nations Children's Fund; 2015 (http://www.who.int/maternal_child_adolescent/documents/levels_trends_child_mortality_2015/en/, accessed 28 November 2016).

20. World health statistics 2014. Geneva: World Health Organization; 2014 (http://apps.who.int/iris/bitstream/10665/112738/1/9789240692671_eng.pdf?ua=1, accessed 12 October 2014).

21. Human development report 2014. New York: United Nations Development Programme; 2014 (http://hdr.undp.org/sites/default/files/hdr14-report-en-1.pdf, accessed September 2014).

22. World development indicators. Washington DC: World Bank Group; 2014 (http://databank.worldbank.org/data/views/variableSelection/selectvariables.aspx?source=world-development-indicators, accessed 12 October 2014).

23. Yaacoub N, Badre L. Statistics in focus: Education in Lebanon. Issue 3 April 2012. Beirut: Central Administration of Statistics; 2012 (http://www.cas.gov.lb/images/PDFs/SIF/CAS_Education_In_Lebanon_SIF3.pdf, accessed 13 January 2016).

24. Global health observatory data repository: Deaths attributable to the environment: data by country. Geneva: World Health Organization; 2015 (http://apps.who.int/gho/data/view.main.35600, accessed 7 April 2015).

25. Global health observatory data repository: Burden of disease: Inadequate water, sanitation and hygiene in low- and middle-income countries. Geneva: World Health Organization; 2015 (http://apps.who.int/gho/data/view.main.INADEQUATEWSHv?lang=en, accessed 7 April 2015).

26. Global health observatory data repository: Population using solid fuels (estimates): data by country. Geneva: World Health Organization; 2015 (http://apps.who.int/gho/data/node.main.135, accessed 7 April 2015).

27. Ministry of Public Health. Statistical bulletin 2012. Beirut: Ministry of Public Health, European Union, World Health Organization, United Nations High Commissioner for Refugees; 2014 (http://www.moph.gov.lb/en/Pages/8/327/statistical-bulletins, accessed 22 December 2015).

28. Global health expenditure database: Table of key indicators, sources and methods by country and indicators. Geneva: World Health Organization; 2015 (http://apps.who.int/nha/database/Key_Indicators_by_Country/Index/en, accessed 21 April 2015).

29. National health accounts summary table, 2012. Beirut: Ministry of Public Health 2014 (http://www.moph.gov.lb/userfiles/files/Statistics/NHA2012SummaryTable.pdf, accessed 22 December 2015).

30. Global health observatory data repository: Health infrastructure: data by country. Geneva: World Health Organization; 2015 (http://apps.who.int/gho/data/view.main.30000, accessed 23 April 2015).

31. Global health observatory data repository: Mental health: Facilities: data by country; Geneva: World Health Organization; 2015 (http://apps.who.int/gho/data/node.main.MHFAC?lang=en, accessed 23 April 2015).

32. Global health observatory data repository: Mental health: Human resources: data by country; Geneva: World Health Organization; 2015 (http://apps.who.int/gho/data/node.main.MHHR?lang=en, accessed 23 April 2015).

33. Kreft S, Eckstein D, Junghans L. Global climate risk index 2015. Bonn: Germanwatch; 2015 (http://germanwatch.org/de/9470, accessed 27/4/2015).

34. Acute flaccid paralysis (AFP) cases by week of onset. Cairo: World Health Organization Regional Office for the Eastern Mediterranean; 2015 (AFP surveillance

Number 853, Week 06, ending 8 February 2015) (http://www.emro.who.int/images/stories/polio/documents/Polio_Fax_issues_2015/Week_06-15.pdf?ua=1, accessed 23 March 2015).

35. Syria regional refugee response: Inter-agency information sharing portal. Geneva: United Nations High Commissioner United for Refugees; 2016 (http://data.unhcr.org/syrianrefugees/country.php?id=122, accessed 13 January 2016).
36. Global appeal: Lebanon. Geneva: United Nations High Commissioner United for Refugees; 2016 (http://www.unhcr.org/cgi-bin/texis/vtx/page?page=49e486676&submit=GO, accessed 14 January 2016).
37. Where we work: Lebanon. Geneva: United Nations High Commissioner United for Refugees; 2016 (http://www.unrwa.org/where-we-work/lebanon, accessed 14 January 2016).
38. Syria regional crisis: 2015 Syria crisis response progress report. Amman: United Nations Relief and Works Agency; 2015 (http://www.unrwa.org/sites/default/files/2015_syria_crisis_response_progress_report.pdf, accessed 14 January 2016).
39. World population prospects: the 2012 revision (DVD edition). New York: United Nations, Department of Economic and Social Affairs, Population Division; 2013.
40. Global health observatory data repository: Immunization. Geneva: World Health Organization; 2015 (http://apps.who.int/gho/data/node.main.A824?lang=en, accessed 8 April 2015).

WHO-EM/HST/224/E