



Addressing diabetes as a public health challenge in the Eastern Mediterranean Region

Executive summary

Diabetes is a global, multifactorial and complex clinical and public health challenge that has reached epidemic proportions, and whose social and economic impact is growing. The prevalence of diabetes globally has doubled in the past 20 years and it constitutes an important part of the noncommunicable disease (NCD) burden facing health systems.

In the WHO Eastern Mediterranean Region, diabetes is a significant public health issue affecting 55 million of the adult population aged 20–79 years. Comparison of prevalence among adult populations reveals that there is a dramatic increase, of varying intensity among countries, in the prevalence of diabetes after the age of 40. This will influence the approaches adopted by countries to mitigate the rising prevalence.

Diabetes is a leading cause of cardiovascular disease, blindness, kidney failure and lower-limb amputation, causing premature death and disability, increasing health care costs and hampering development and the ability of countries to achieve the health-related Sustainable Development Goals (SDGs). Better management of diabetes is critical to prevent complications. Many countries in the Region are not on track to achieve SDG target 3.4 to reduce premature mortality from NCDs (cardiovascular disease, cancer, diabetes, or chronic respiratory disease) by a third by 2030 relative to 2015.

In recognition of this challenge, many countries in Eastern Mediterranean Region have introduced national plans addressing diabetes. However, despite renewed commitment and better inclusion of diabetes as part of broader NCD health policies, strategies and plans and universal health coverage benefit packages, national action to develop comprehensive and integrated responses to reduce, halt and reverse diabetes, obesity and other related NCD risk factors (tobacco use, unhealthy diet, overweight and physical inactivity) have been uneven across the Region and insufficient to contain the disease.

Moreover, complete or partial disruption to diabetes health services during the COVID-19 pandemic has exacerbated the situation. COVID-19 has highlighted weaknesses in country health systems and underlined the need to restore, maintain and strengthen diabetes services as part of the range of essential health services included within the scope of national COVID-19 strategic preparedness and response plans. This is particularly true in countries with ongoing acute and/or protracted humanitarian crises, where access to diabetes care was already limited.

Building on the momentum created this year by the celebration of the centenary of the discovery of insulin, the launch of the WHO Global Diabetes Compact and the adoption at the Seventy-fourth World Health Assembly of a resolution on diabetes, countries are urged to take a series of actions to prevent diabetes and manage it better to prevent complications. This technical paper calls for a more focused and action-oriented approach to diabetes. It presents the magnitude of the diabetes epidemic and its health and socioeconomic implications in the Eastern Mediterranean Region, summarizes current progress and challenges, and calls for increasing commitment to addressing diabetes. The paper also outlines, through a proposed draft regional framework for action, a set of prioritized interventions and indicators that all governments should consider when scaling up national responses for diabetes prevention and control.

Introduction

1. Diabetes mellitus, more simply called diabetes, is a serious, long-term condition that occurs when the body cannot produce any or enough insulin or cannot effectively use the insulin it produces. Diabetes is one of the major public health challenges of the twenty-first century and has reached epidemic proportions globally, imposing a heavy burden on public health and socioeconomic development. The global prevalence of diabetes among adults over 18 years of age rose from 4.7% in 1980 to 8.5% in 2014 (1). Today, more than 420 million people are living with diagnosed diabetes worldwide. This number is estimated to rise to 570 million by 2030 and to 700 million by 2045, if no effective preventive measures are taken (2). Diabetes has an impact on all age groups, regardless of geography and income. More than 1.1 million children and adolescents below the age of 20 are living with type 1 diabetes (3), while three in every four people with diabetes are of working age (20–64 years) and one in five people over 65 has diabetes.

2. Since 2000, the global age-standardized prevalence of obesity among adults (18 years and older) has increased by 50%, and the crude prevalence in children (5–19 years) has more than doubled, from 2.9% in 2000 to 6.8% in 2016 (4). The rapid rise in childhood and adolescent obesity is particularly worrisome, contributing towards the rising trend of young-onset diabetes (before 40 years) and premature development of other NCDs.

3. Complications of diabetes are the major contributor to the increased mortality and morbidity associated with the disease. These are usually divided into two main categories: macrovascular and microvascular. Macrovascular complications include heart disease and stroke, and microvascular complications include retinopathy, nephropathy and neuropathy. Adults with diabetes have a two- to three-fold increased risk of heart attack and stroke, and globally, more than 80% of end-stage renal disease is caused by diabetes or hypertension, or a combination of both. The prevalence of end-stage renal disease attributed to diabetes is up to 10 times higher in people with diabetes than in those without. Diabetic retinopathy is a major cause of blindness, with diabetes causing 2.6% of global blindness, and neuropathy increases the chance of foot ulcers and infection, and the eventual need for limb amputation. Improved clinical management of diabetes is critical to prevent serious complications.

4. Mortality related to diabetes is increasing worldwide. On average, diabetes reduces life expectancy in people aged 40–60 years by 4–10 years and independently increases the risk of death from cardiovascular disease, renal disease and cancer by 1.3–3.0 times. Diabetes was listed among the top 10 causes of death in 2019, following a significant increase of 70% since 2000. Although the annual risk of dying prematurely from a major NCD between the ages of 30 and 70 years is decreasing globally, there was a 5% increase in diabetes-attributed premature mortality between 2000 and 2016. According to WHO's Global Health Observatory, diabetes was the direct cause of mortality for almost 2 million people globally in 2019.

5. Health expenditure on diabetes is also increasing worldwide. According to the International Diabetes Federation, in 2019, global health expenditure on diabetes was estimated at US\$ 760 billion and is expected to reach US\$ 825 billion by 2030 and US\$ 845 billion by the year 2045 (5).

6. The rise in prevalence is putting a strain on the capacity of countries to guarantee regular and affordable access to essential medicines and appropriate care. Complete or partial disruptions to diabetes and diabetic complication management services due to the COVID-19 pandemic have further exacerbated the situation. The pandemic has highlighted weaknesses in country health systems and underlined the need to restore, maintain and strengthen diabetes services as part of the range of essential health services included within the scope of national COVID-19 strategic preparedness and response plans. This is particularly true in countries with ongoing acute and/or protracted humanitarian crises, where access to diabetes care was already limited.

The Eastern Mediterranean Region

7. The Eastern Mediterranean Region is one of the WHO regions most affected by the alarming trend in increasing diabetes prevalence having witnessed one of the most dramatic increases in age-adjusted diabetes prevalence, from around 6% in 1980 to almost 13.7% in 2014 (Fig. 1) (6). In 2019, 55 million (12.8%) of the adult population aged 20–79 years in the Region had diabetes (7). If action is not taken, this figure is predicted to rise to 108 million by 2045, the second highest regional increase globally. Approximately, 150 000 children and adolescents below the age of 20 in the Region live with type 1 diabetes and around 20 000 are newly diagnosed each year (7). People with type 1 diabetes can live healthy lives with the provision of an uninterrupted supply of insulin, education, support and blood glucose testing equipment.

8. National surveys using the STEPwise Approach to NCD Risk Factor Surveillance (STEPS) and health examination surveys have been conducted in countries of the Region to estimate the prevalence and trends of NCDs and their risk factors at national level. Fig. 2 shows the percentage of the population with raised fasting blood glucose or currently on medication for raised blood glucose according to the WHO definition value (≥ 7.0 mmol/L) among national populations in some countries of the Region during 2009–2019. Many countries have reported national figures above the global (9.3%) and regional (12.8%) estimated averages, including Egypt, Iraq, Kuwait, Libya, Tunisia and Qatar (7).

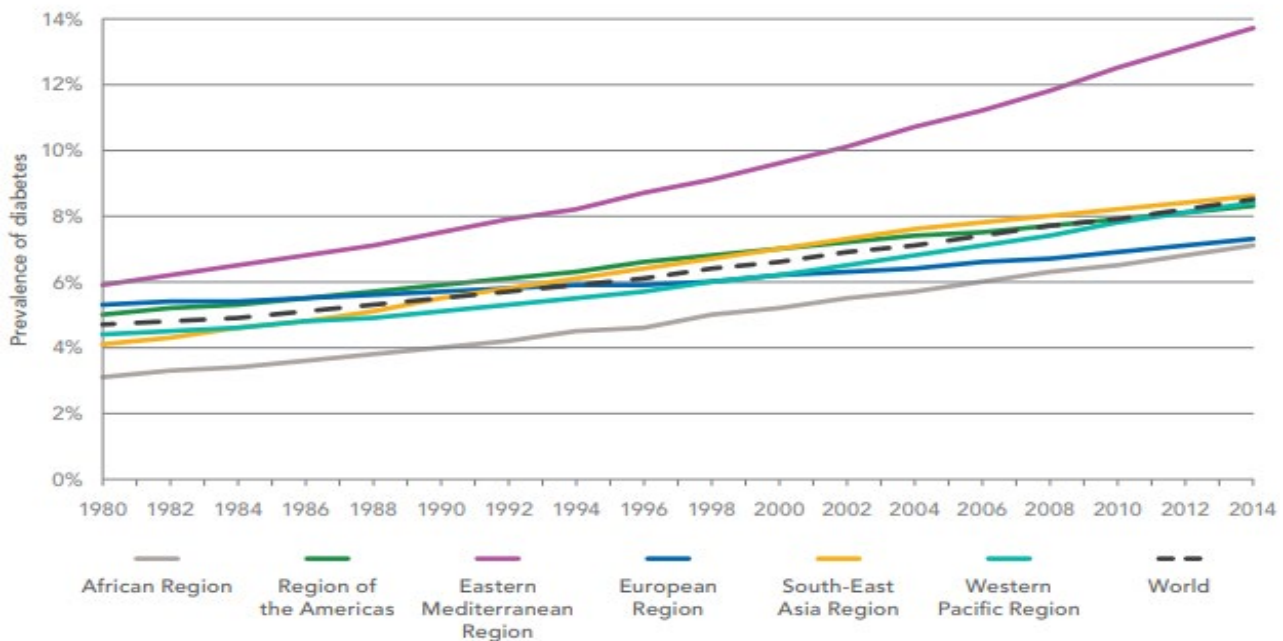


Fig. 1. Trends in prevalence of diabetes, 1980–2014, by WHO region (≥ 7.0 mmol/L or on medication, age-standardized 18+ years)

Source: Global report on diabetes. Geneva: World Health Organization; 2016.

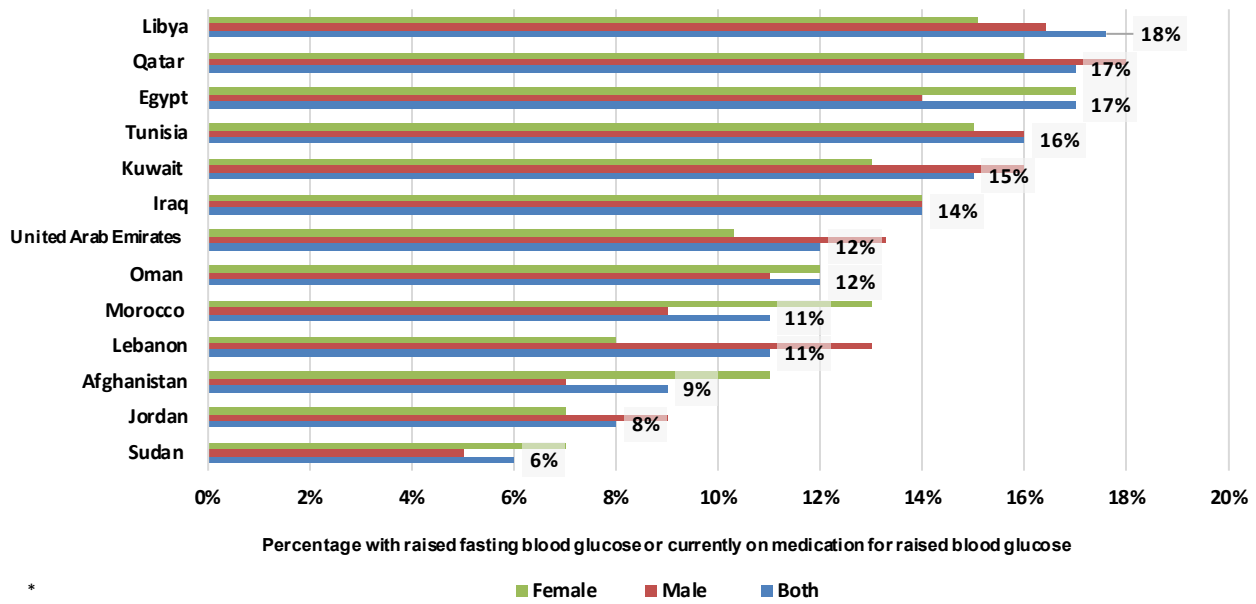


Fig. 2. Percentage with raised fasting blood glucose or currently on medication for raised blood glucose* among selected country populations in the Eastern Mediterranean Region, by gender, 2009–2019**

Notes: * Raised blood glucose defined as plasma venous value ≥ 7.0 mmol/L. ** Data from STEPS surveys in countries: Afghanistan (2018), Egypt (2017), Iraq (2015), Jordan (2019), Kuwait (2014), Lebanon (2017), Libya (2009), Morocco (2017), Oman (2012), Qatar (2012) and Sudan (2016). The Tunisian National Health Examination (2016) and the *UAE national health survey report (2017–2018)* have been used as sources for equivalent data for Tunisia and United Arab Emirates to STEPS survey data. Source: STEPS country reports. Data and reporting. Geneva: World Health Organization; 2021 (<https://www.who.int/teams/noncommunicable-diseases/surveillance/data>).

9. According to data from the STEPS surveys, the prevalence of raised blood glucose or those taking medication for raised blood glucose differs considerably with age, as shown in Fig. 3. The data compares the prevalence among adult populations below and above the age of 40 years in some countries of the Eastern Mediterranean Region. There is a dramatic increase in prevalence after 40, of varying intensity between countries. This will inform the different approaches adopted by countries to mitigate rising diabetes prevalence.

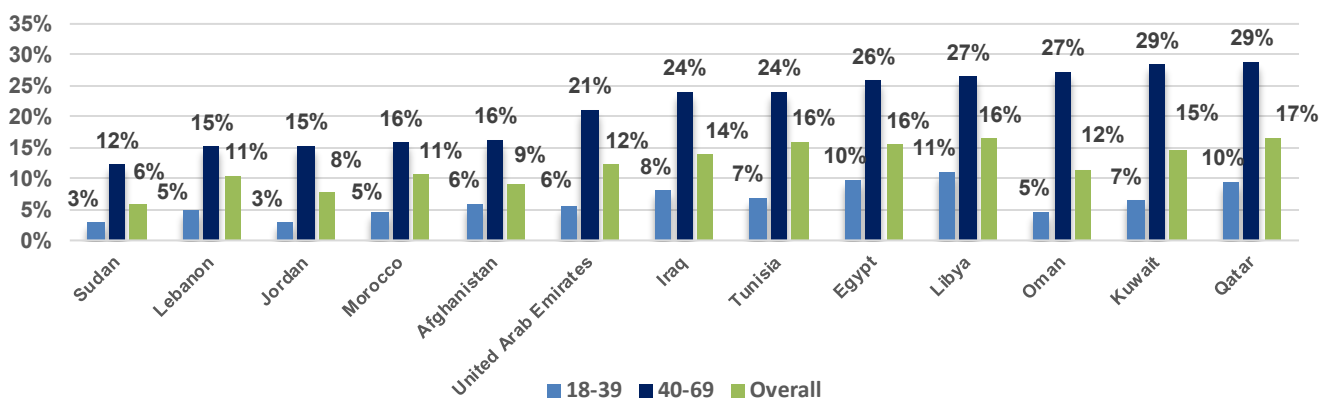


Fig. 3. Prevalence of raised blood glucose or those taking medication for raised blood glucose* among those aged below and above 40 years in countries of the Eastern Mediterranean Region (2009–2019)**

Notes: * Raised blood glucose defined as plasma venous value ≥ 7.0 mmol/L. ** Data from STEPS surveys in countries: Afghanistan (2018), Egypt (2017), Iraq (2015), Jordan (2019), Kuwait (2014), Lebanon (2017), Libya (2009), Morocco (2017), Oman (2012), Qatar (2012) and Sudan (2016). The Tunisian National Health Examination (2016) and the *UAE national health survey report (2017–2018)* have been used as sources for equivalent data for Tunisia and United Arab Emirates to STEPS survey data. Source: STEPS country reports. Data and reporting. Geneva: World Health Organization; 2021 (<https://www.who.int/teams/noncommunicable-diseases/surveillance/data>).

10. The diabetes epidemic is being primarily driven by the demographic transition, along with increasing consumption of unhealthy diets, tobacco use, increasing prevalence of obesity and declining levels of physical activity. Tobacco smokers, for instance, are 30–40% more likely to develop type 2 diabetes than non-smokers. Among children and adolescents aged between 5 and 19 years, the prevalence of overweight has increased dramatically, increasing from 7.4% in 1975 to 27.4% in 2016. Among adults, prevalence of overweight and obesity combined increased from 23.5% in 1975 to 31.8% in 2016 (8). However, while the trend in some countries in the Region is increasing, in countries with the highest prevalence levels there are signs that the increase is slowing down or even that prevalence is declining (8).

11. Diabetes is presently among the leading causes of end-stage renal disease in the Region and contributes substantially to cardiovascular disease (9), which together constitute the largest cause of morbidity and mortality in people living with diabetes. Systematic reviews indicate that the relative risk of cardiovascular disease for people with diabetes compared to those without is between 1.6 and 2.6, and is higher among those of younger age and slightly higher in women (7). Diabetes is also a major cause of foot ulceration and lower limb amputation. The co-occurrence of these morbidities severely impairs quality of life, reduces productivity and causes major suffering. Individuals with diabetes are 7–30 times more likely to have non-traumatic lower extremity amputations than are the general population, accounting for over half of all such amputations.

12. Regional data on acute and chronic diabetic complications are generally scarce. According to an analysis undertaken for the Global Burden of Disease Study on the causes of blindness and vision impairment in 2020 (not including high-income countries), diabetic retinopathy is the fourth leading cause of moderate or severe vision impairment and fifth leading cause of blindness in the Eastern Mediterranean Region (10). Individual studies on retinopathy prevalence among people with diagnosed diabetes in the Region shows wide variability, ranging from 10% to over 60% (24.5% for the Region overall) (11). A systematic review and meta-analysis on the prevalence of nephropathy among people with diagnosed diabetes in the Region reported a prevalence of 26% (12).

13. Data on a diabetes-related deaths in the Region are usually missing or inaccurate, which highlights the need to further improve civil registration and vital statistics in countries of the Region. However, estimates suggest a steady rise in diabetes-caused mortality over the last two decades as shown in Fig. 4. Diabetes and its complications were responsible for an estimated 418 900 deaths in adults aged 20–79 years in 2019 (16.2% of all-cause mortality), with the highest percentage (22.4%) in the age group 30–39 years. About 53.3% of all deaths from diabetes in the Region occurred in people under 60 years, making it the WHO region with the second highest proportion of diabetes-related deaths under 60 years of age. Most of the diabetes-attributable deaths occurred in middle-income countries, which account for 86.7% of all diabetes-related deaths in the Region (7).



Fig. 4. Diabetes-caused mortality in the Eastern Mediterranean Region per 100 000 population, 2000–2019*

Note: * Number of diabetes-attributed deaths per 100 000 of the Eastern Mediterranean Region's total population.

Source: Number of deaths attributed to NCDs, by type of disease and sex. Global Health Observatory. Geneva: World Health Organization; 2019 (<https://www.who.int/data/gho/data/indicators/indicator-details/GHO/number-of-deaths-attributed-to-non-communicable-diseases-by-type-of-disease-and-sex>); Population, total. Data. Washington, DC: The World Bank; 2019 (<https://data.worldbank.org/indicator/SP.POP.TOTL>).

14. Diabetes also contributes to the increasing incidence and burden of other major NCDs such as oral diseases and possibly cancer. Type 2 diabetes and a high body mass index have been found to be associated with an increased risk of several common cancers. Poor glucose control is associated with several oral health issues such as early tooth eruption or gum infection. Poor oral health further impacts the quality of life of people living with diabetes, compromising effective diet and nutrition.

15. There is evidence of a bidirectional relationship between mental disorders and diabetes. Approximately one third of people with diabetes have psychological and/or social problems which impede their ability to self-manage their diabetes (13). People living with diabetes are two to three times more likely to have depression than people without diabetes and only 25–50% of people with diabetes who have depression are diagnosed and treated (14). People with mental disorders are also at an increased risk of diabetes (around double the risk for schizophrenia and bipolar disorder, and 1.5 times for depression) (15). In addition, differential exposure to risk factors such as smoking, harmful use of alcohol, unhealthy diet and sedentary behaviour, increases their risk of being overweight or obese, while the iatrogenic effects of medications for mental disorders (there is an association between diabetes and some anti-psychotic medications, anti-depressants and lithium) and inequitable access to health care services drive an increased risk of diabetes-associated complications and mortality. The situation is further complicated for those with comorbid diabetes and mental disorders, who often struggle to comply with advice on monitoring and managing their glycaemic status. Evidence has shown that many people living with diabetes have significant psychological difficulties that have been aggravated by the COVID-19 pandemic (16).

16. Diabetes is a costly disease whose economic impact is often overlooked. The disease not only financially impacts affected individuals, but also society, health systems and national economies through direct medical costs and indirect costs such as lost productivity caused by morbidity, disability, premature mortality, and increased requirements for social support. Available evidence reveals a considerable variation in health care expenditure on diabetes among countries of the Region. Indeed, according to a recent study on the economic burden of diabetes in the Eastern Mediterranean Region,¹ diabetes costs the economy about US\$ 60 billion per year, equivalent to 1.7% of the Region's GDP in 2019 (ranging between countries from 0.7% to 2.2% of GDP). The direct cost is US\$ 26 billion (43%) and the indirect cost is US\$ 34 billion (57%).

17. For several complex reasons, most countries in the Region are off track to achieve SDG target 3.4 to reduce premature mortality from NCDs (cardiovascular disease, cancer, diabetes, or chronic respiratory diseases) by a third by 2030 relative to 2015 levels. Cost-effectiveness analysis of different approaches is important, especially in low- and middle-income country settings, to understand which evidence-based interventions are feasible to implement for people with diabetes in a given context, taking into consideration workforce capacity and the resources of the setting. Investing in measures to reduce multimorbidity is cost-effective, and multi-modal approaches, which include behavioural and pharmacological interventions and other components such as peer support or technology, are promising, but have yet to be studied systematically to clarify which multi-component programmes are effective and which components are most beneficial. Achieving universal health coverage and health for all is also crucial if disparities and inequalities in health care access are to be addressed.

Diabetes policies and programmes as part of national responses for NCD prevention and control

18. World Health Assembly resolution WHA42.36 on the prevention and control of diabetes mellitus, adopted in 1989, attempted for the first time to bring the diabetes epidemic to the forefront of the global health policy arena. In response to the resolution, several developments took place at the regional level. A regional taskforce on diabetes was established in 1991, followed by the formation of a regional advisory panel in 1992, and the development of a regional action plan on diabetes in 1992. The publication *Diabetes prevention and control: a call for action* published in 1993, was one of the first WHO documents (as part of a technical series) proposing a regional roadmap for diabetes prevention and control. This was followed by

¹ Elmusharaf K. Diabetes: economic burden of type 2 diabetes mellitus in Eastern Mediterranean Region, unpublished report, 2021.

the establishment of several national diabetes control programmes in the Region, with a focus on improving standards of care through education and the establishment of training programmes.

19. The development of national diabetes control programmes in the Region in the 1990s was accompanied by the creation of diabetes centres and specialized clinics at tertiary level, complemented in several countries of the Region by diabetes consultations or clinics at the primary health care level, many of which served as a basis for the progressive integration of NCD services. While the focus was on expanding service provision, less attention was paid to population-level preventive measures to prevent diabetes and related risk factors.

20. In 2000, given the increasing burden of NCDs, WHO launched its first global strategy on NCD prevention and control, promoting a more integrated approach to the prevention and control of the four main NCDs (cardiovascular disease, cancer, chronic respiratory disease and diabetes) and four important risk factors (tobacco use, harmful use of alcohol, physical inactivity, and unhealthy diet). This landmark document was followed in 2004 by the *Global strategy on diet, physical activity and health*, and the development and endorsement by the World Health Assembly of the first and second NCD global action plans, respectively covering 2008–2013 (resolution WHA61.14) and 2013–2020 (resolution WHA66.10), and subsequently extended to 2030 to align with the timeline for the SDGs. These efforts were reinforced by the first United Nations (UN) General Assembly High-level Meeting on the Prevention and Control of NCDs in 2011 and the following two High-level Meetings in 2014 and 2018, with their respective Political Declarations outlining a set of commitments and recommendations for Member States, WHO and partners to further scale up national responses for the prevention and control of NCDs. The recognition in the 2018 Political Declaration of environmental determinants (such as air pollution) as a risk factor and mental health and neurological conditions as NCDs, broadened the scope of the NCD agenda from “4x4” (diseases and risk factors) to “5x5” and called for a more integrated responses to NCDs, away from the focus on single diseases, including diabetes.

21. In response to the 2011 UN Political Declaration on NCDs, WHO developed a regional framework for action to implement the UN Political Declaration on NCDs, which was endorsed by the 59th Regional Committee for the Eastern Mediterranean in 2012. Regularly updated, it constitutes the regional NCD roadmap, providing strategic interventions and indicators to assess country progress in the areas of governance, prevention and reduction of risk factors, health care, and surveillance and monitoring.

22. Against this backdrop, the countries of the Eastern Mediterranean Region are increasingly aware of the need to better address diabetes as a public health priority and are developing more integrated responses with various policies, initiatives and programmes. The WHO NCD Country Capacity Survey and the recent mid-point evaluation of the implementation of the WHO global action plan for the prevention and control of noncommunicable diseases 2013–2020 provide important validated data on country responses to diabetes (see Table 1). Out of 22 countries/territories in the Region, 17 report having a national operational policy, strategy or action plan for diabetes. Based on the nine WHO global NCD voluntary targets, 14 countries/territories have set time-bound national targets for NCDs, including targets to halt the rise of diabetes and/or obesity. Maintaining a healthy weight is an important factor in preventing diabetes, and halting diabetes and obesity is closely linked with policies/strategies and plans that address unhealthy diet and/or physical inactivity, along with broader NCD risk prevention policies addressing tobacco consumption and the harmful use of alcohol.

Table 1. Capacity of countries/territories of the Eastern Mediterranean Region for prevention, detection, control and management of diabetes, by country group 2019*

Country group ^a	Country	Recent national risk factor survey in which blood glucose was measured	A set of time-bound national targets for NCDs based on the 9 voluntary global targets	Operational policy/ strategy/ action plan for diabetes	Vertical programmes/ policies/ strategies/and action plans addressing diabetes	Vertical programmes/ policies/strategies/ and action plans addressing overweight and obesity	Vertical programmes/ policies/ strategies/and action plans addressing physical inactivity	Evidence-based national guidelines/ protocols/standards/ available for the management (diagnosis and treatment) of diabetes	Availability of basic technologies for early detection, diagnosis of diabetes			Availability of both oral antihyperglycaemic agents and insulin in the primary care facilities of the public health sector		Presence of a national diabetes registry	
									Blood glucose	OGT test	HbA1c test	Insulin	Metformin		
Group 1	Bahrain	✓	✓	✓	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Kuwait	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗
	Oman	✓	✓	✓	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Qatar	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Saudi Arabia	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	United Arab Emirates	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Total	6	6	6	4	6	6	6	6	6	6	6	6	6	5
	100%	100%	100%	67%	100%	100%	100%	100%	100%	100%	100%	100%	100%	83%	
Group 2	Egypt	✓	✓	✓	✗	✓	✓	✓	✓	✗	✓	✓	✓	✓	✓
	Iran (Islamic Republic of)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Iraq	✓	✓	✓	✓	✓	✓	✓	✓	✗	✗	✓	✓	✓	✓
	Jordan	✓	✓	✓	✓	✓	✓	✓	✓	✗	✗	✓	✓	✓	✓
	Lebanon	✓	✗	✓	✓	✗	✗	✓	✓	✓	✓	✓	✓	✓	✗
	Libya	✓	✗	✓	✗	✗	✗	✓	✓	✗	✗	✓	✓	✓	✓
	Morocco	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗
	Syrian Arab Republic	✓	✗	✗	✗	✗	✗	✓	✓	✓	✓	✓	✓	✓	✓
	Tunisia	✓	✓	✓	✓	✓	✓	✗	✓	✗	✗	✓	✓	✓	✗
	Palestine	✓	✓	✓	✗	✓	✗	✓	✓	✓	✓	✓	✓	✓	✓
	Total	10	7	9	6	7	6	9	10	5	6	10	10	7	
	100%	70%	90%	60%	70%	60%	90%	100%	50%	60%	100%	100%	70%		
Group 3	Afghanistan	✓	✗	✓	✗	✗	✗	✗	✗	✗	✗	✗	✓	✗	
	Djibouti	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✓	✓	✗	
	Pakistan	✓	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✓	
	Somalia	✗	✗	✗	✗	✗	✗	✗	✗	✓	✓	✓	✓	✗	
	Sudan	✓	✓	✓	✗	✗	✗	✓	✓	✗	✗	✓	✓	✗	
	Yemen	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	
	Total	3	1	2	0	0	0	1	4	1	1	3	4	1	
	50%	17%	33%	0%	0%	0%	17%	67%	17%	17%	50%	67%	17%		
Eastern Mediterranean Region	19	14	17	10	13	12	16	20	12	13	19	20	13		
	86%	64%	77%	45%	59%	55%	73%	91%	55%	59%	86%	91%	59%		

Notes. * Classification of countries in the Eastern Mediterranean Region by group: Group 1: Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and United Arab Emirates; Group 2: Egypt, Iran (Islamic Republic of), Iraq, Jordan, Lebanon, Libya, Morocco, Palestine, Syrian Arab Republic and Tunisia; Group 3: Afghanistan, Djibouti, Pakistan, Somalia, Sudan and Yemen.

Source: NCD Country Capacity Survey conducted by the WHO Regional Office for the Eastern Mediterranean, 2019.

23. According to the Country Capacity Survey, it is clear that Group 1¹ countries have the highest capacity for the detection and management of diabetes, compared to other country groups, in terms of governance, funding, infrastructure, services and other factors. This greater capacity is a sound investment and appropriate response to tackling the strikingly high prevalences of diabetes in these countries. However, given the dramatic increase in prevalence after the age of 40, a change in approach to the control of diabetes may be needed, with more focus on the modifiable risk factors in earlier age groups to prevent and minimize the occurrence of the disease in the first place. Hence, population-based interventions are required.

24. Globally, one in two adults with diabetes are unaware of their condition. Four out of five adults with undiagnosed diabetes live in developing countries. Applying International Diabetes Federation estimates, close to 45% (24 million) of adults aged 20–79 years with diabetes are undiagnosed in the countries of the Eastern Mediterranean Region (Fig. 5). People who are unaware that they are living with diabetes often develop multiple organ damage and debilitating/costly complications before their condition is diagnosed. Therefore, a life-course approach² to health and well-being from the early years of life until old age should be incorporated in population-based interventions that tackle lifestyles and behaviours to rectify the underlying causes of diabetes.

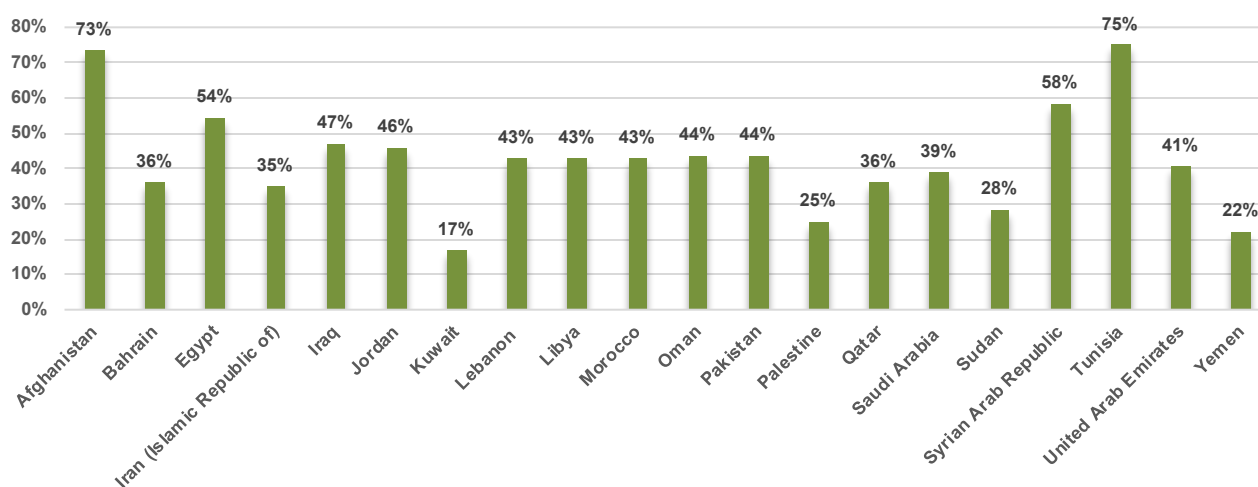


Fig. 5. Proportion of undiagnosed diabetes in countries of the Eastern Mediterranean Region (20–79 years)

Source: IDF diabetes atlas, 9th edition. Brussels: International Diabetes Federation; 2019 (<https://www.diabetesatlas.org/en/resources/>).

25. The adoption and implementation of nutrition and healthy diet-related policies remains a critical strategy for addressing diabetes, obesity and unhealthy diet in the Region. Following the adoption of the regional framework for action on NCDs in 2012, the Regional Committee for the Eastern Mediterranean adopted a regional framework for action on obesity prevention in 2018 based on policy priorities previously identified to address obesity and diabetes in the Region. The subsequent regional nutrition strategy 2020–2030, adopted in 2019, further provides guidance and includes the following specific objectives related to the prevention of overweight and obesity and diet-related NCDs:

- reduce the prevalence of overweight in children under five to not more than 3%;
- halt the rise in diabetes and obesity in adults;

¹ For the purposes of this paper, the countries of the Region have been categorized into three broad groups based on population health outcomes, health system performance and level of health expenditure: Group 1 comprises countries where socioeconomic development has progressed considerably over the past decades, supported by high income; Group 2 comprises largely middle-income countries which have developed extensive public health service delivery infrastructure but face resource constraints; and Group 3 comprises countries which face major constraints in improving population health outcomes as a result of lack of resources for health, political instability, conflicts and other complex development challenges. Group 1 includes Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and United Arab Emirates. Group 2 includes Egypt, Iran (Islamic Republic of), Iraq, Jordan, Lebanon, Libya, Morocco, Palestine, Syrian Arab Republic and Tunisia. Group 3 includes Afghanistan, Djibouti, Pakistan, Somalia, Sudan and Yemen.

² For information on the life-course approach see: The implications for training of embracing a life course approach to health. Geneva: World Health Organization: 2000 (https://www.who.int/ageing/publications/lifecourse/alc_lifecourse_training_en.pdf).

- halt the rise in overweight in school-age children and adolescents 5–18 years old;
- reduce mean population intake of salt/sodium by 30%; and
- virtually eliminate industrially produced trans-fatty acids from the food supply.

26. In addition, the nutrition strategy 2020–2030 highlights several recommended priority actions relating to reducing unhealthy diets and creating healthy food environments. Most of them are very cost-effective and feasible to implement anywhere (the NCD “best buys”). These priority actions are to:

- progressively reduce intakes of salt, sugar and saturated fats by improving the nutritional quality of foods through government-led reformulation programmes;
- implement a tax on sugar-sweetened beverages and use other taxes and subsidies to promote healthy diets;
- review food subsidy programmes and progressively eliminate subsidies for all types of fats/oils and sugars; and
- implement mandatory standards for ingredient listing, back-of-pack nutrient declarations and simplified front-of-pack labelling for all pre-packaged foods.

27. The last decade has seen an increase in action to tackle unhealthy diets across the Region, as countries are increasingly faced by the double burden of malnutrition. This has included efforts to inform and educate the population about healthy diet, such as through the dissemination of guidelines on healthy eating. Crucially, it has also included measures to create healthier food environments, notably by improving the nutritional quality of foods served or available in schools, implementing legislation to virtually eliminate industrial trans-fatty acids, pursuing salt reduction strategies and applying taxes to sugar-sweetened beverages. There has also been success in updating food composition data, including data on trans-fatty acids, sugars and salt, in several countries.

28. Table 2 summarizes the existence or not of a range of WHO-recommended policies and measures to reduce unhealthy diet in the countries/territories of the Region. As shown in the table, most of the gaps occur in lower-income countries (Group 3 countries). For example, 10 of the Region’s countries had policies relating to trans-fatty acids by 2019 and are increasingly implementing specific regulatory measures, while 13 countries had fully or partially implemented national salt reduction policies. However, only four countries had adopted policies relating to aspects of marketing food to children by 2019, and concrete action in this area is still lacking. Eight countries had introduced taxes, mostly at a rate of 50%, on carbonated or sugar-sweetened beverages. Evidence on the impact of these so-called “sin” taxes implemented in 2017, shows that from 2016 to 2017, the growth rate of sales volumes decreased from 5.44% to 1.33% in Saudi Arabia, 7.37% to 5.93% in United Arab Emirates and 5.25% to 5.09% in Bahrain. In Qatar, sin taxes were implemented in 2019, and a reduction in sales volumes from 3.78% to 2.45% was observed between 2019 and 2020. In Oman, a reduction from 3.60% to 2.99% was observed between 2018 and 2019. Kuwait was the last Gulf Cooperation Council (GCC) member country to implement sin taxes in 2020 and the growth rate in sales volumes decreased from 6.31% to 5.47% between 2019 and 2020.

29. In order to meet the agreed global and regional goals relating to nutrition and diet-related NCDs, countries will need to build on this progress and scale up action across the Region, while intensifying efforts in areas where concrete action is lacking. Although many countries are implementing the WHO’s NCD best buys, such as reducing salt quantity in food, raising taxes on tobacco and alcohol, and promoting public awareness of diet and physical activity, few have reached a full level of implementation or sustained their levels of investment. Furthermore, while policies and programmes have been established, there are few clear monitoring frameworks or nationally-agreed targets and indicators in place to assess their impact on diabetes prevention and control. Moreover, none of the countries of the Region who have set targets to halt diabetes have so far been able to show a decline in prevalence.

Table 2. Existence of policies and measures to promote healthy diet in the countries of the Eastern Mediterranean Region

Countries	Any policies on marketing of food to children ¹	Any policies to reduce salt consumption ¹	National policies on saturated fatty acids/trans-fatty acids ¹	National policies on saturated fats ¹	National policies on trans-fatty acid elimination ¹	Specific measure to ban or virtually eliminate industrial trans-fatty acids ²	Tax on sugar-sweetened beverages (level of tax levied) ³
	2019	2019	2017	2019	2019	2019	2019
Low-income countries							
Afghanistan	X	X	✓	X	X	X	X
Somalia	n.d.	n.d.	X	n.d.	X	X	X
Sudan	X	X	X	X	X	X ⁵	X
Syrian Arab Republic	X	X	X	X	X	X	n.d.
Yemen	X	X	X	X	X	X	n.d.
Lower-middle income countries							
Djibouti	n.d.	X	X	X	X	X	X
Egypt	X	✓	X	X	X	X ^{4,5}	n.d.
Morocco	✓	✓	✓	✓	✓	X ⁴	✓ (50%)
Pakistan	X	X	X	X	X	X	X
Palestine ⁶	X	✓	✓	n.d.	X	X ^{4,5}	X
Tunisia	X	✓	✓	✓	✓	X ^{4,8}	✓
Upper-middle income countries							
Iran (Islamic Republic of)	✓	✓	✓	✓	✓	✓	✓ (20%)
Iraq	X	✓	✓	✓	n.d.	X	X
Jordan	X	✓	✓	X	✓	X ⁸	X
Lebanon	X	X	X	X	X	X	X
Libya	X	X	X	X	X	X	X
High-income countries							
Bahrain	✓	✓	✓	✓	✓	✓ ⁷	✓ (50%)
Kuwait	X	✓	✓	✓	✓	✓ ⁷	X
Oman	✓	✓	✓	✓	✓	X ^{5,7,8}	✓ (50%)
Qatar	X	✓	✓	✓	✓	X ^{5,7}	✓ (50%)
Saudi Arabia	X	✓	✓	✓	✓	✓ ⁷	✓ (50%)
United Arab Emirates	X	✓	✓	✓	✓	X ^{5,7}	✓ (50%)

Notes: ✓ = policy/measure reported, X = no policy/measure reported, n.d. = no data.

¹ Information from Global Health Observatory NCD data repository (<https://apps.who.int/gho/data/view.main.2473>).

² Information from *Countdown to 2023: WHO report on trans-fat elimination 2020* (2020) and nutrition focal points.

³ Information from country nutrition focal points on existence of a tax and, where available, the level of tax levied, e.g. 50% of pre-tax price.

⁴ Assessment has been conducted to identify sources and intakes.

⁵ National action plan or legislation under development.

⁶ All Palestinian data obtained from Ministry of Health.

⁷ The Gulf Standards Organization adopted GSO standard 2483/2015 for the members of the Gulf Cooperation Council; implementation varies between countries (see main text).

⁸ Other complementary measures in place.

Source: Al-Jawaldeh A, Hammerich A, Doggui R, Engesveen K, Lang K, McColl K. (2020). Implementation of WHO recommended policies and interventions on healthy diet in the countries of the Eastern Mediterranean Region: from policy to action. *Nutrients*. 2020 Nov 30;12(12):3700. doi:10.3390/nu12123700.

30. The early detection and proper management of diabetes is needed to complement population-level preventive interventions. While most countries in the Region report service provision for diabetes, the full continuum of services from prevention to early diagnosis, treatment and care of diabetes and its complications is not explicitly and comprehensively addressed in national health benefit packages and across the various levels of care in many countries. Furthermore, despite being discovered 100 years ago (in 1921), insulin, oral antihyperglycaemic agents and essential diagnostic technologies for glucose monitoring are often unaffordable and not fully covered by national pre-payment or insurance mechanisms, exposing people to financial hardship, especially the poor, vulnerable and marginalized parts of the population. Without adequate insurance coverage or national provision, people living with diabetes are more likely to incur substantial medical expenses, including catastrophic health expenditures, compared to those without diabetes.

31. While WHO does not generally recommend population-based screening of diabetes, health systems should be able to early detect people at high risk of developing diabetes and other cardiovascular risk factors, according to the national burden and health system capacities. In this regard, some countries in the Region (mainly from the higher-income country Group 1) have set up programmes to identify people at risk of diabetes, using an adapted risk score. Qatar, for instance, has set up ambitious goals to screen the entire adult population, offering tailored health plans to all screened individuals. However, most of these programmes have only recently been introduced and their performance is yet to be evaluated. Evolving evidence suggests that early identification of individuals at risk of developing diabetes offers an opportunity for timely prevention, early diagnosis and treatment, such as drug therapy and counselling. Type 2 diabetes is preceded by a long period of impaired fasting glucose and is often associated with obesity, which constitutes the principal risk factor for diabetes progression. There is now sufficient evidence suggesting that intensive lifestyle interventions (with or without early initiation of medication) are successful at achieving significant weight loss and can potentially slow or reverse the onset of diabetes.

32. Poor effective coverage and overall quality of health services (including for diabetes) constitutes one of the important challenges in the Eastern Mediterranean Region, and is a major challenge for achieving universal health coverage in the Region. Uncontrolled diabetes has severe consequences for people's health and well-being and increases both the direct and indirect costs of diabetes. Data from recent STEPS surveys completed in the Region, highlight the large treatment gap among individuals diagnosed with diabetes. Barriers for optimal diabetes management are multiple and cut across all building blocks of the health system (Table 3). People living with diabetes need long-term care that is personalized, proactive and sustainable. Primary health care can organize and deliver health care to detect and manage diabetes and its complications in the early stages. Breaking down walls between levels of care and achieving greater coordination across the full spectrum of services throughout the life course will lead to an approach that is oriented to people's needs. Attaining and maintaining good glycaemic control is a cornerstone of diabetes care. Regional studies have found that the management of diabetes is suboptimal at all levels of the health care system, with less than 50% of patients with diabetes reaching target levels of glycaemic control in most countries in the Region.

33. WHO has developed a prioritized set of cost-effective interventions (the best buys) as well as tools and packages to deliver an acceptable quality of care in the primary health care setting, including the WHO package of essential noncommunicable disease interventions (PEN) for primary health care and the HEARTS technical package. These interventions are feasible for adoption by most countries in the Region, but require a comprehensive and aligned health system response. The PEN package provides a range of clinical guides, clinical protocols and self-care guides and a facility readiness checklist for the better management and control of diabetes and cardiovascular disease risk. Islamic Republic of Iran has launched an adopted version, called IraPEN, with specific targets for prevention and control of the four common NCDs, including diabetes. The HEARTS package supports ministries of health, with the participation of local stakeholders and technical support of WHO, to integrate global best practices in the prevention and control of cardiovascular diseases within existing health services, with an emphasis on primary health care, including for better control of diabetes, high blood pressure and the promotion of secondary prevention. HEARTS is being implemented in Jordan, Morocco, Sudan and Yemen. To assess the effectiveness of diabetes management and control, there should be a monitoring and evaluation system that includes regular monitoring of biochemical parameters and occurrence of complications due to diabetes. Moreover, initiatives should be complemented by population-wide approaches for effective diabetes prevention.

Table 3. Main barriers to optimal diabetes management

- Lack of universal access to quality, safe, effective and affordable essential medicines, diagnostics and health technologies
- Shortage of qualified health workers, with insufficient education, training and supportive supervision to develop knowledge and skills
- Fragmented health care systems, clinical pathways and team structures, especially at primary care level, hindering integrated multidisciplinary detection, prevention and management of diabetes and related complications with appropriate referrals
- Limited infrastructure, including specialized centres for the management of people with diabetes requiring more advanced management (type 1 diabetes, young-onset diabetes or patients with multiple comorbidities)
- Limited engagement of people with diabetes and investments to promote self-care and enhance patient–provider communication
- Absence or limited development of (electronic) patient medical records for systematic collection of routine clinical diabetes care and related risk factors

Source: (4).

34. The Eastern Mediterranean Region is the site of several major conflicts and hosts most of the world's refugees. To address supply disruptions and reduce the risk of acute exacerbations and complications among people living with NCDs, an NCD emergency kit was developed by WHO to provide temporary medication requirements for approximately 10 000 people for three months, focusing on the most common NCDs, including insulin, oral antihyperglycaemic agents and diagnostic supplies for diabetes (17). Since 2017, more than 7500 modules of the NCD kit have been procured, deployed or pre-positioned in Afghanistan, Iraq, Libya, Palestine, Syrian Arab Republic and Yemen, and in the UN-WHO humanitarian hub in Dubai. The NCD kit is also increasingly used across the globe in various humanitarian settings, including as part of the COVID-19 response. In some countries, the kit has been used as a first attempt to integrate NCD services at primary health care level, thus bridging the humanitarian–development nexus.

35. According to a rapid assessment survey of service delivery for NCDs in the Region during the COVID-19 pandemic, more than half (53%) of the countries surveyed reported partially or completely disrupted services for hypertension treatment and urgent dental care, 48% for palliative care services, 47% for asthma services and rehabilitation services, 42% for treatment for diabetes and cancer management, and 26% for cardiovascular emergencies. Additionally, countries were asked which NCD-related services were included in the list of essential health services in their COVID-19 response plans. Services to address cardiovascular diseases (68%), cancer (68%), diabetes (68%) and chronic respiratory diseases (58%) were the services most frequently included in the COVID-19 response plans. However, the inclusion of NCD services in the list of essential health services was lowest in Group 3 countries: only a quarter of these countries (25%) reported doing so for some services. As witnessed during the COVID-19 pandemic and other emergencies in the Region and beyond, insufficient attention has been given to NCDs as part of emergency preparedness and response. Despite documented severe disruption of NCD services during the COVID-19 pandemic, comprehensive approaches to protect, maintain and restore essential health services, including for people living with diabetes, are still lacking. In many fragile countries and those experiencing protracted emergencies, not all essential health services are prioritized and financial protection mechanisms do not exist. People in need of chronic care, some of whom require uninterrupted access to essential medicines such as insulin, are therefore often at increased risk of complications and death.

36. Health workers are the backbone of national health systems. Their training and skills are critical to the range of services needed for effective diabetes care. Despite health workforce shortages presenting an obstacle to the availability and accessibility of diabetes services in the Region, it is essential to ensure minimum standards of diabetes service provision across the continuum and levels of care through a focus on developing/strengthening human resources and institutional capacity, especially at the primary health care level. While health workforce development to address the increasing burden posed by NCDs and diabetes requires strategic planning and additional resources, much more can be done to maximize the functions and performance of the existing health workforce. In many parts of the world, multiple changes have occurred in the treatment and care of people living with diabetes, allowing a wide range of health care providers to contribute as part of a multidisciplinary team. Nurses, midwives, nutritionists, psychologists and health educators can make a positive contribution to the care provided by general physicians and specialist doctors. Despite several important national health sector reform initiatives affecting service delivery models, diabetes care in the Region remains centred on doctors and less attention has been given to involving and training

auxiliary health workers, including by expanding the scope of work of those already in service. Nurses, who constitute the largest group of health care providers and the point of first contact, remain underutilized and their leadership role, as part of a multidisciplinary approach to diabetes care, in improving access and care coordination, and empowering individuals and the community, has not been fully harnessed.

37. Self-management and therapeutic education for people with diabetes is an important part of successfully preventing or delaying diabetes complications. People living with diabetes often have much experience and, when appropriately empowered and educated, can become the main experts on their conditions. Inclusive and meaningful engagement of people living with diabetes and their families can influence the design of people-centred health services and other broader diabetes policies, empowering them and enhancing self-care and treatment adherence and outcomes. However, exclusion, stigma, poor health literacy, inexplicit entitlements and a lack of governance platforms still limit the meaningful participation of people living with diabetes in most parts of the Region. Several initiatives in GCC member countries, Islamic Republic of Iran and Morocco, focusing on self-care and community engagement, can be learned from and could be further scaled up.

38. Digital health innovations, such as mobile diabetes health applications, telemedicine, wearable or implantable devices, and artificial intelligence to support diabetic retinopathy screening, are revolutionizing diabetes prevention and care. Be He@lthy, Be Mobile is a global mobile health (mHealth) initiative, led by WHO and the International Telecommunication Union (ITU), to support countries in the use of technology in the prevention and management of various health conditions. Diabetes was identified as one of the priority conditions to be addressed and, consequently, the Mobile Health for Diabetes Prevention and Management (mDiabetes) programme was developed. A guidance handbook has been developed and disseminated to provide evidence-based programme content to support countries in developing their mDiabetes programmes (18). Several countries in the Region have now embarked on mDiabetes programme implementation, including Egypt, Sudan and Tunisia. Many technologies and modalities have been utilized in mDiabetes initiatives in these countries, including text messaging, interactive voice messaging and short videos. The content of these communications mainly focuses on providing awareness about diabetes and relevant preventive lifestyle behaviours and educating patients on their conditions, self-management, medication adherence and prevention of complications. The mRamadan campaign is a special version of the mDiabetes programme during the holy month of Ramadan, in which messages on fasting and other practices during the holy month are shared with subscribers.

39. The COVID-19 pandemic, and the massive disruption of services caused by it, has only increased the demand for digital health. Many countries have been pushed to re-examine their traditional face-to-face patient–physician service delivery models and rapidly deploy digital technology and new models of care to meet the various challenges of the pandemic. WHO has recently compiled some examples of the digital health innovations implemented in the Region as a way to mitigate the pandemic (19). For example, the Be He@lthy, Be Mobile platform has been used to educate people living with diabetes on the risks associated with contracting COVID-19 through a set of messages shared with subscribers.

40. Those mDiabetes programmes that have been implemented and evaluated in the Region have had high levels of utilization and acceptance among recipients. However, despite these promising experiences, the implementation and evaluation of these programmes has been uneven across the Region and mainly limited to high-income countries, such as GCC member countries, where digital health transformation is part of a broader e-governance agenda. In other countries, digital health interventions are mainly undertaken by the private sector, with minimal regulatory and legislative frameworks for their implementation. Funding is also a challenge for existing programmes in many countries, which need to be scaled up and sustained.

41. The monitoring and evaluation of the diabetes burden should be part of the NCD surveillance system that monitors NCD outcomes (mortality and morbidity), exposure to risk factors, social determinants, and national responses, focusing on the health care system response. Several countries in the Region are currently monitoring risk factors for chronic disease using STEPS, a standardized method for collecting, analysing and disseminating data on NCDs and related risk factors. However, lack of data and research remains a major impediment that limits evidence-informed policy and decision-making in the Region, as well as the monitoring and evaluation of programmes. From epidemiological trends in diabetes (prevalence/incidence disaggregated by age, sex and

type of diabetes mellitus complication) to the economic burden and the effective coverage of interventions, limited data and research are available. Strengthening surveillance for diabetes and related risk factors by implementing the WHO NCD Global Monitoring Framework, covering the monitoring of exposures (risk factors), outcomes (morbidity and mortality) and national health responses (capacity and interventions), is therefore vital, along with the promotion of research to monitor disease burden and assess the effectiveness of individual and population-wide interventions for the prevention and control of diabetes and obesity.

Vision and roadmap to address diabetes as a public health problem in the Eastern Mediterranean Region

42. The public health community today finds itself at a critical juncture in the response to the growing threat posed by diabetes, ahead of the next (fourth) UN General Assembly High-level Meeting on NCDs in 2025 and the 2030 deadline for the targets of the SDGs. Member States have to report on the five WHO voluntary global diabetes-related targets for 2025 which are:

- a 25% relative reduction in the overall mortality from cardiovascular diseases, cancer, diabetes, or chronic respiratory diseases, and halting the rise in diabetes and obesity;
- at least 50% of eligible people receive medicinal treatment (including glycaemic control) and counselling to prevent heart attacks and strokes;
- an 80% availability of the affordable basic technologies and essential medicines, including generics, required to treat major NCDs (including diabetes) in both public and private facilities; and
- a 30% relative reduction in prevalence of current tobacco use in persons aged 15+ years.

43. Building on the momentum created this year by the celebration of the centenary of the discovery of insulin, the launch by WHO of the Global Diabetes Compact and the recently-adopted World Health Assembly resolution WHA74.4 on diabetes, an opportunity is provided to the Member States of the Eastern Mediterranean Region, WHO and other regional stakeholders to scale up national responses to diabetes, ensuring that policies and efforts to address diabetes are coherent, consistent and aligned with the related regional roadmaps, such as the 2018 Salah Declaration on Universal Health Coverage and the regional framework for action on NCDs. Governments need to progressively cover people with cost-effective high-impact policies and legislative and regulatory measures to reduce the risk factors for NCDs and provide health services, medicines, vaccines and health technologies for the prevention, screening, early diagnosis and treatment of diabetes and its complications.

44. The proposed regional framework for action on diabetes prevention and control in the WHO Eastern Mediterranean Region outlines a set of interventions to be considered by all governments in order to step up their efforts and take concerted action to control the disease in the Region, focusing on strategic interventions, including both population- and individual-based interventions, that will provide the quickest progress and highest return on investment across the four domains of governance, prevention, management, and surveillance and research (see the Annex).

45. The main purpose of the regional framework for action is to guide leaders and decision-makers to:

- establish an operational, funded and costed national multisectoral strategy/action plan, encompassing all areas of diabetes prevention, control and management, as part of a national NCD plan, with timebound national targets and indicators for diabetes and obesity prevention and control adapted to national circumstances;
- implement cost-effective population-based interventions to reduce risk factors for diabetes (tobacco, diet and unhealthy lifestyles) that will contribute to the reduction in premature mortality;
- strengthen the health system to respond more effectively and equitably to the health care needs of people living with diabetes and to integrate diabetes as part of a benefits package, including access to diagnostics and quality, safe, effective, affordable and essential medicines, such as insulin, oral hypoglycaemic agents and other diabetes-related medicines and health technologies, in accordance with the national context and priorities; and
- strengthen diabetes management and the monitoring and evaluation of diabetes and related risk factor responses, through ensuring countries have adequate diabetes mellitus management guidelines for primary health care centres and country-level surveillance and monitoring systems, including surveys,

that are integrated into existing national health information systems, and through identifying priority areas for diabetes research.

Conclusion

46. The COVID-19 pandemic has highlighted the vulnerability of people living with diabetes and other NCDs, revealed the weaknesses of health systems and underlined the need to restore, maintain and strengthen NCD services as part of the range of essential health services that have been disrupted by the pandemic. Given the burden of diabetes and NCDs in the Eastern Mediterranean Region, recovery from COVID-19 needs to go hand-in-hand with a dramatic acceleration of NCD action plan implementation.

47. This technical paper has reviewed the current regional burden, responses and challenges, and suggested a set of ways forward for scaling up national and regional efforts to address the prevention and control of diabetes as a public health challenge. The 68th session of the Regional Committee for the Eastern Mediterranean is invited to consider the draft regional framework for action on diabetes prevention and control in the WHO Eastern Mediterranean Region for endorsement or further revision.

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Annex. Framework for action on diabetes prevention and control in the WHO Eastern Mediterranean Region

Strategic interventions	Indicators
<p>In the area of governance</p> <ul style="list-style-type: none"> • Establish a national subcommittee for diabetes prevention and control under the national committee for noncommunicable diseases with consideration to include non-state actors the private sector and civil society, and meaningful engagement from people living with diabetes (PLWD) • Develop an action plan for the prevention and control of diabetes, as part of a national NCD multisectoral strategy/policy/action plan • Strengthen/establish diabetes programmes with sufficient infrastructure and capacity to effectively run the programme • Identify and define an essential set of integrated interventions (population- and individual-based interventions) for the prevention and control of diabetes as part of a universal health coverage benefit package based on WHO/national guidance • Ensure sufficient national budgetary allocation for diabetes prevention and control and identify financing mechanisms to reduce out-of-pocket expenditure • Periodically assess national capacity for the prevention and control of diabetes and develop a monitoring mechanism for national diabetes plan implementation with the engagement of non health sector • Ensure that PLWD share the same human and social rights as people who do not have diabetes, regardless of race, ethnicity, gender and age, 	<ul style="list-style-type: none"> • An operational, funded and costed national action plan encompassing all areas of diabetes prevention and control as part of a national NCD multisectoral strategy/policy/action plan • Set timebound national targets and indicators for diabetes and obesity prevention and control adapted to national circumstances
<p>In the area of prevention</p> <ul style="list-style-type: none"> • Control the obesity pandemic, with particular attention to prevention of childhood obesity • Increase the availability of and demand for healthier food and reduce the availability of and demand for unhealthy food, including through continued implementation of targeted education, such as front-of-pack labelling, and reducing the intake of unhealthy food rich in sugar and sweetened beverages, trans fatty acids and saturated fatty acids through food reformulation, sin taxes and other regulatory measures • Create supportive environments for the promotion of healthy lifestyles, including in schools, universities and supportive workplaces • Reduce the exposure of children and others to marketing, advertising, promotion and sponsorship of energy-dense, nutrient-poor foods and beverages (e.g., through voluntary or compulsory advertising codes of conduct), and enhancing early life and growth patterns, including promotion of breast feeding • Accelerate the implementation of WHO Framework Convention on Tobacco Control (WHO FCTC) and ratify the Protocol to Eliminate the Illicit Trade of Tobacco Products • Raise diabetes awareness and motivate behavioural change through education and social media campaigns to encourage people to maintain healthy weight, increase their levels of physical activity and healthy eating campaigns (national education and/or social marketing campaigns). • Implement the best buys to reduce the harmful use of alcohol 	<ul style="list-style-type: none"> • Four demand-reduction measures of the WHO FCTC (such as taxation, smoke-free policies, warning labels, advertising bans or smoking cessation programmes) • Four measures to reduce unhealthy diet (such as promotion of weight loss, low salt diet and increased consumption of fruits, vegetables and whole grains) • At least one annual national public awareness campaign on diabetes prevention and control and/or healthy behaviour

	Strategic interventions	Indicators
In the area of management	<ul style="list-style-type: none"> • Integrate prevention, early detection and treatment of diabetes mellitus and related CVD risk factors into primary health care guided by existing national/WHO packages • Identify individuals at high risk for type 2 diabetes eligible for primary prevention, using risk conditions and scores, as well as data from screening programmes and population-based surveillance systems • Implement and assess the efficacy of structured lifestyle interventions (diet, physical activity), +/- medication, for primary prevention of type 2 diabetes • Implement health care best buys for diabetes management and prevention of complications through primary care teams • Develop human and institutional capacity to early detect, prevent and manage diabetes-related complications (diabetic foot, retinopathy, chronic kidney disease) • Establish multidisciplinary specialized diabetes centres/clinics for the management of complex cases (such as type 1 diabetes, young-onset diabetes, multiple morbidities), with appropriate referrals and counter-referrals from/to primary health care level • Develop/strengthen human resources and institutional capacity to ensure minimum standards of diabetes service provision across the continuum of care, including access to psycho-social support and selfcare and for the early detection, prevention and management of diabetes-related complications, palliative care and rehabilitation • Ensure availability, affordability and quality of insulin, glucose lowering agents and diagnostic supplies • Ensure continuity of diabetes care during humanitarian emergencies, using the WHO NCD emergency kit and other tools to support safe and effective provision of diabetes care, with improved access to quality and affordable insulin, glucose lowering agents and diagnostic supplies • Meaningfully engage people living with diabetes 	<ul style="list-style-type: none"> • Diabetes fully integrated as part of universal health coverage benefits packages, with documented evidence of integration at primary health care level • Evidence-based national guidelines/protocols/standards for the early detection and management of diabetes in primary health care recognized/approved by the government or competent authority • Availability and affordability of insulin, oral hypoglycaemic agents and diagnostic supplies periodically assessed and reported (using WHO/Health Action International methodology or other standardized assessment tool) • Percentage of 18 years and above adult population with raised blood glucose above 7.0 mmol/L
In the area of surveillance and research	<ul style="list-style-type: none"> • Strengthen/implement NCD risk factor surveillance to assess the population at risk (prevalence), coverage and control of diabetes, using appropriate diagnostic techniques among target populations • Establish a monitoring and evaluation system to assess the effectiveness of diabetes management and control, including regular monitoring of biochemical parameters and occurrence of complications due to diabetes • Develop/scale up electronic patient medical records for systematic collection of routine clinical diabetes care and related risk factor data using unique national identification mechanisms • Develop diabetes registries to monitor and improve quality of diabetes care • Link diabetes registries with mortality and other disease registries • Promote research to assess effectiveness of individual- and population-wide interventions to prevent and control diabetes and obesity 	<ul style="list-style-type: none"> • STEPS survey implemented at national representative level among adult population every 3–5 years to include coverage and control indicators using appropriate diagnostic techniques • Set of standardized facility-level indicators in place at primary health care (public and private sector) level for diabetes treatment, coverage and control to monitor and evaluate treatment gaps and clinical outcomes as part of the NCD surveillance system