

Tunisia Country Report

PASCAR and WHF Cardiovascular Diseases Scorecard project

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Abstract

Data collected by the Pan-African Society of Cardiology for the World Heart Federation's scorecard project regarding the current state of cardiovascular disease prevention, control and management along with related non-communicable diseases in Tunisia are presented. Furthermore, the strengths, threats, weaknesses and priorities identified from these data are highlighted in concurrence with related sections in the incorporated infographic. Information was collected using open-source data sets available online and relevant government publications.

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On behalf of the World Heart Federation (WHF), the Pan-African Society of Cardiology (PASCAR) co-ordinated data collection and reporting for the country-level Cardiovascular Diseases Scorecard to be used in Africa.^{1,3} The objectives of the scorecard have previously been published along with data from seven African countries.³ The Tunisian Heart Foundation, a member of PASCAR and the WHF, along with epidemiologists from the University of Sousse, assisted in collating and verifying the data.

Based on the data collected, we summarise the strengths, threats, weaknesses and priorities identified, which need to be considered in conjunction with the associated sections provided in the infographic published with this report. Data sets used included open-source data from the World Bank, World

Health Organization (WHO), Institute for Health Metrics and Evaluation and the International Diabetes Federation (IDF), along with other relevant and government publications.

Part A: Demographics

According to the World Bank (2018), Tunisia is a lower-middle-income country with 31% of its people living in rural areas.⁴ As indicated by the National Institute of Statistics, 2.9% of the population was living in extreme poverty in 2015.⁵ Life expectancy at birth in 2018 was 74 and 79 years for men and women, respectively.⁴ The general government health expenditure was 4.1% of the gross domestic product (GDP) in 2017, while the country's GDP per capita was US\$3 317.5 in 2019.⁴

Part B: National cardiovascular disease epidemic

The national burden of cardiovascular diseases (CVD) and risk factors for non-communicable diseases (NCD)

Tunisia's premature deaths, attributable to CVD (30–70 years old), was 11% in 2012,⁶ while 44% of the estimated NCD deaths (86%) accounted for CVD in 2016.⁷ In 2017, the age-standardised total CVD death rate was very high at 51.5%, compared to 31.8% for the Global Burden of Disease (GBD) data.⁸ The percentage of disability-adjusted life years (DALYs) resulting from CVD for men was 23.8% and for women 19.4%, which is also higher than the GBD data of 14.66% for both genders. The prevalence of atrial fibrillation (AF) and atrial flutter was 0.3%, while that of rheumatic heart disease (RHD) was 0.01% compared to the GBD data of 0.53%. The total RHD mortality rate was 0.15% of all deaths, which is lower than the GBD data of 0.51% (Table 1).⁸

Tobacco and alcohol

Data on the prevalence of tobacco use for adult men and women (≥ 15 years old) in 2018 were 49.3 and 2.9%, respectively. In 2008, the prevalence of smoking in adolescents (13–15 years old) was 20.1 and 3.8% for boys and girls, respectively.⁹ The proportion of premature CVD mortality attributable to tobacco is 5%, which is much lower than the global 10%,¹⁰ while the estimated annual direct cost of tobacco use is unknown. The three-year (2016–18) average recorded alcohol consumption per capita (≥ 15 years) was 1.6 litres (Table 1).⁹

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Table 1. Cardiovascular disease indicators for Tunisia

Indicators	Male	Female	Total	Year
Status of national cardiovascular disease epidemic				
Premature CVD mortality (30–70 years) (% deaths)	–	–	11	2012
Total CVD mortality (% of deaths)	50.7	52.5	51.5 (31.8)*	2017
Total RHD mortality (% of deaths)	0.12	0.19	0.15 (0.5)*	2017
DALYs attributable to cardiovascular diseases (%)	23.8	19.4	21.9 (14.7)*	2017
AF and atrial flutter (%)	0.3	0.3	0.3 (0.5)*	2017
Prevalence of RHD (%)	0.01	0.01	0.01 (0.5)*	2017
Tobacco and alcohol				
Prevalence of adult tobacco use (≥ 15 years) (%)	49.3 (36.1)**	2.9 (6.8)**	–	2018
Prevalence of youth (13–15-year-olds) tobacco use (%)	20.1 (18.2)**	3.8 (8.3)**	–	2010
Estimated direct (healthcare-related) cost of tobacco use in your population (in current US\$)	–	–	–	–
Proportion of premature CVD mortality attributable to tobacco (%)	–	–	5 (10)**	2004
Recorded alcohol consumption per capita (≥ 15 years) (in litres of pure alcohol) (three-year average)	–	–	1.6	2016–18
Raised blood pressure and cholesterol				
Population with raised BP (SBP ≥ 140 or DBP ≥ 90 mmHg) (%)	23.8 (24.1)**	22.5 (20.1)**	–	2015
Population with raised TC (≥ 5.0 mmol/l) (%)	37.3	43.8	40.7 (38.9)**	2008
DALYs attributable to hypertension (%)	13.2	12.1	12.74 (8.7)*	2017
Mortality caused by hypertensive heart disease (% of deaths)	2.7	4.7	3.55 (1.7)*	2017
Physical activity				
Adolescents (11–17 years) who are insufficiently active (< 60 minutes of moderate- to vigorous-intensity PA daily) (%)	74.1	88.2	81.4	2010
Adults (age-standardised estimate) who are insufficiently active (< 150 minutes of moderate-intensity PA per week, or < 75 minutes of vigorous-intensity PA per week) (%)	26.4	34.1	30.4 (27.5)**	2016
Overweight and obesity				
Adults who are overweight (BMI ≥ 25–< 30 kg/m ²) (%)	57.1	65.8	61.6 (38.9)**	2016
Prevalence of obesity (BMI ≥ 30 kg/m ²) (%)	19.1	34.3	26.9 (13.1)**	2016
Diabetes				
Defined population with fasting glucose ≥ 126 mg/dl (7.0 mmol/l) or on medication for raised blood glucose (age-standardised) (%)	12.1 (9)*	12.9 (8)**	–	2014
Prevalence of diabetes (20–79 years) (%)	–	–	8.5 (9.3) [#]	2019

CVD, cardiovascular disease; RHD, rheumatic heart disease; DALYs, disability-adjusted life years; AF, atrial fibrillation; SBP, systolic blood pressure; DBP, diastolic blood pressure; TC, total cholesterol; PA, physical activity; BMI, body mass index.
 *IHME global data exchange⁸
 **WHO global data⁹
[#]IDF Diabetes Atlas.¹¹

Raised blood pressure and cholesterol

In 2015, about 24% of men and 22.5% of women had raised blood pressure (BP) (systolic BP ≥ 140 or diastolic BP ≥ 90 mmHg) levels, which is more or less similar to the GBD data of 24.1 and 20.1% for men and women, respectively.⁹ In 2017, the percentage of DALYs lost because of hypertension was 12.74%, while mortality rate caused by hypertensive heart disease was 3.55 versus 1.65% for global data (Table 1).⁸ The percentage of individuals with raised total cholesterol levels (≥ 5.0 mmol/l) was 40.7% compared to Global Health Observatory (GHO) data (38.9%).⁹

Physical activity

Data for 11–17-year-old adolescents indicated that 81.4% were insufficiently active [< 60 minutes of moderate- to vigorous-intensity physical activity (PA) daily]. The age-standardised estimate for adults who were insufficiently active (< 150 minutes of moderate-intensity PA per week or < 75 minutes of vigorous-intensity PA per week) was 30.4%, which is higher than GHO data at 27.5% (Table 1).⁹

Overweight and obesity

In 2016, the prevalence of overweight [body mass index (BMI) ≥ 25–< 30 kg/m²] and obesity (BMI ≥ 30 kg/m²) in adults 25

years and older was almost 62 and 27%, respectively.⁹ Compared to global data, both these indicators are much higher than the 38.9% for overweight and 13.1% for obesity.⁹ More women than men were overweight (65.8 vs 57.1%) and obese (34.3 vs 19.1%), respectively (Table 1).

Diabetes

The percentage of the population defined with a fasting blood glucose level ≥ 7.0 mmol/l or on medication for raised blood glucose levels (age-standardised) in 2014 was 12.1% for men, and for women 12.9%. In 2019, the age-adjusted prevalence (20–79 years old) of diabetes was 8.5%, which is higher than that of Africa (3.9%), and slightly lower than the global level at 9.3% (Table 1).¹¹

Part C: Clinical practice and guidelines

Health system capacity

The country had an average of 13 physicians and 25.1 nurses per 10 000 of the population in 2017, while there were 23 hospital beds for every 10 000 people in 2015.⁹

Data for locally relevant clinical tools to assess CVD risk,¹² and guidelines for the detection and management of AF and management of acute rheumatic fever are available.^{13,14} Appropriate national guidelines are available for the treatment

of tobacco dependence.¹⁵ However, locally relevant clinical guidelines for the management of pharyngitis and RHD as well as for CVD prevention are lacking. Tunisia does not have a registry for people with a history of rheumatic fever and RHD, although a system exists to measure the quality of care provided to people who had suffered acute cardiac events.⁹ Standard treatment guidelines for diabetes mellitus and other NCD, or conditions such as hypertension have been developed.^{16,17}

Essential medicines and interventions

In Tunisia, all the essential CVD medicines are available in the public sector,⁹ as are warfarin and clopidogrel.¹⁸ Data regarding total cholesterol measurement,⁹ priority CVD risk stratification and secondary prevention of rheumatic fever and RHD are available at the primary healthcare level (Habib Gamra, pers commun).

Secondary prevention and management

The percentage of people with a history of CVD taking aspirin, statins and at least one antihypertensive agent is 38%.¹⁹ In 2012, 32.9% of hypertensive persons received medical treatment,²⁰ however, the percentage of high-risk patients with AF receiving oral anticoagulants was unknown.

Part D: Cardiovascular disease governance

Strategies that address NCD, which include CVD and risk factors such as diabetes, have been developed, although not much work has been done in this area²¹ since no dedicated budget is available to ensure implementation. However, Tunisia has an operational unit or department in the ministry of health (MoH) that is responsible for NCD.^{22,23} Furthermore, the prevention and control of RHD in Tunisia is efficient through the acute articular rheumatism monitoring programme.²⁴ However, a national surveillance programme that includes CVD and their risk factors is lacking.

Regarding tobacco use, Tunisia has formulated a national tobacco control plan and multi-sectoral co-ordination mechanism for tobacco control.¹⁵ Collaborative projects between the Tunisian MoH and that of higher education and scientific research and technology have been reported by Hassen Ghannem.¹⁷ No information is available on the total annual government expenditure for cardiovascular healthcare.

Tunisia was part of the WHO-CHOICE project, which incorporated a cost-effectiveness modelling tool that gathers national data to be used for developing the most effective interventions for leading causes of the disease burden.²⁵ The model can be adjusted according to the specific needs of the country and assist policymakers in planning and prioritising services at a national level.²⁵ The benefits of CVD prevention and control for population health and the economy have also been modelled, according to Saidi *et al.*¹²

Assessment of policy response

No legislation exists in Tunisia mandating health financing for CVD or that of essential CVD medicines at affordable prices. However, van Mourik *et al.*²⁶ reported that Tunisia is one of the countries where medicines are provided free of charge in the public healthcare sector.

Legislation exists banning smoking in indoor workplaces and public areas, other public places, public transport, all forms of tobacco advertising, promotion and sponsorship, as do measures to protect tobacco-control policies from tobacco industry interference.¹⁵ However, that mandating clear and visible warnings on at least half of the principal display areas of tobacco packs does not exist.

According to *The Report*, there seem to be policies that ensure equitable nationwide access to healthcare professionals and facilities in Tunisia,²⁷ including those ensuring screening of individuals at high risk for CVD.²⁸ However no sustainable funding from taxation is available for CVD.

Taxes on unhealthy foods or sugar-sweetened beverages have been introduced at 25% of the excise tax (*Discussion et adoption par l'assemblée des représentants du peuple dans sa séance du 9 décembre 2017*).^{23,29} Tunisia is one of the few African countries with a policy that entirely reduced the affordability of tobacco products through increasing tobacco excise taxes.²² In 2018, the excise tax of the final consumer price of tobacco products was 74%. No data were found on excise tax of the final consumer price of alcohol products, or legislation banning the marketing of unhealthy foods to minors, and clear and visible warnings on foods high in calories, sugar or saturated fats. No policy interventions were available promoting a diet that reduces CVD risk or those facilitating PA.¹⁷

Stakeholder action

In Tunisia, non-governmental organisation (NGO) advocacy for CVD policies and programmes as such has not been demonstrated.²¹ No information about active involvement of patients' organisations in advocacy for CVD/NCD prevention and management is available or that regarding advocacy champions and or patient engagement for RHD groups. However, the involvement of civil society in the development and implementation of a national tobacco control plan is available.¹⁰ A community-based intervention with multi-sectoral interventions was implemented in Tunisia, which demonstrated the effectiveness of reducing risk factors in the community, workplace and schools from 2010–2014.³⁰ However, the involvement of policymakers and political will was recommended to reinforce the intervention, have a better impact, and to ensure a long-term effect.³¹

Specific activities by cardiology professional associations aiming at a reduction in the premature CVD mortality rate of 25% by 2025 are also not known. In an interventional study at six workplaces, screening and health-promotion initiatives were suggested, 'to avert the excessive risk for CVD,' which included BP measurements.³²

As part of the data collected for Tunisia, the following strengths, threats, weaknesses and priorities are summarised.

Strengths


Tunisia implemented a CVD registry in three geographical populations, which provided incidence and fatality data for the first time in 2001.³³ These authors suggested the data should be integrated into the local health system. A decrease in the incidence of RHD was reported by Belguith *et al.*²⁴

TUNISIA – SEPTEMBER 2020


Status of Cardiovascular Disease (CVD) and Non-communicable diseases (NCD)

Country Demographics

World Bank Classification
Lower-middle income




31%
of population living in rural areas
60% (Sub-Sahara Africa)





TUNISIA

0.15%
of total mortality caused by RHD
Global data: 0.51%



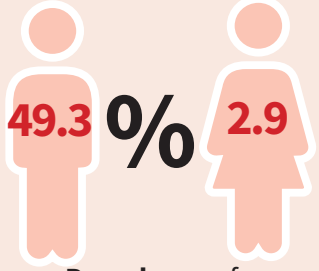
0.01%
Prevalence of rheumatic heart disease (RHD)
Global data: 0.53%




5%
of premature CVD mortality attributable to tobacco
Global data: 10%



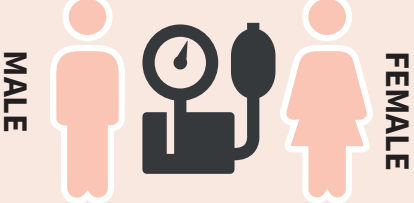
49.3% MALE **2.9%** FEMALE
Prevalence of tobacco use age ≥15
Global data: 36.1% (male) 6.8% (female)



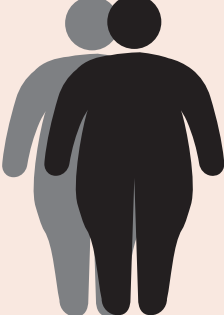
3.55%
of deaths caused by hypertensive heart disease
Global data: 1.65%




23.8% MALE **22.5%** FEMALE
of population with raised blood pressure (SBP ≥140 or DBP ≥90)
Global data: 24.1% (male) 20.1% (female)




26.9%
Prevalence of obese adults (BMI of ≥30 kg/m²)
Global data: 13.1%




51.49%
of deaths caused by CVD
Global data: 31.8%



40.7%
of population with raised total cholesterol (≥5.0 mmol/L)
Global data: 38.9%

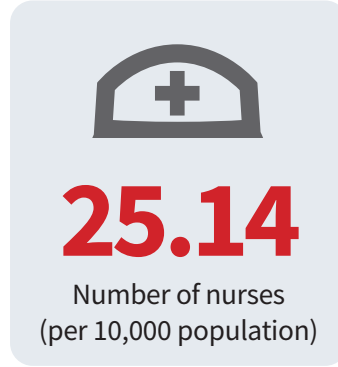
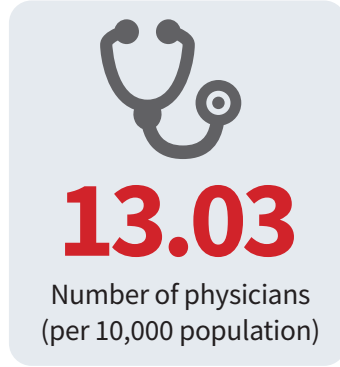


8.5%
Prevalence of diabetes (ages 20-79)
3.9% (Africa)



TUNISIA

Health System Capacity



KEY: No data Not in place In process/ partially implemented In place

Clinical Practice and Guidelines

Locally-relevant (national or subnational level):

Clinical tool to assess CVD risk

Guidelines for treatment of tobacco dependence

Clinical Guidelines for:

The detection and management of atrial fibrillation

The detection and management of acute rheumatic fever

The detection and management of rheumatic heart disease

The detection and management of diabetes

CVD prevention (within the last 5 years)

A system to measure the quality of care provided to people who have suffered acute cardiac events

TUNISIA

Cardiovascular Disease Governance

A national strategy or plan that addresses:

CVDs and their specific risk factors

NCD and their risk factors

Rheumatic heart disease prevention and control as a priority

A national surveillance system that includes CVDs and their risk factors

Stakeholder action

Non-governmental organizations' advocacy for CVD policies and programmes

Civil society involved in developing and implementing of national CVD prevention and control plan

For more information, please email info@worldheart.org info@pascar.org secretariat@tunhf.org

The National Tunisian Registry of Atrial Fibrillation (NATURE-AF) collects data from patients with AF to define the prevalence of various cardiovascular incidences leading to death. NATURE-AF will reveal the outcomes, frequency and quality of oral anticoagulation in these patients. Through this registry, unique data on the management and outcomes of AF patients on treatment will become available.¹³

Article 38 of the new 2014 constitution ensures preventative and curative health services receive priority, including social protection and free healthcare for low-income populations and the provision of sufficient resources towards quality services.²⁷ Essential medicines are also available free of charge in the public health sector.²⁶

Tunisia, along with Rwanda, South-Africa and Senegal, is one of the few countries in our project with a system to measure the quality of care provided to people who have suffered acute cardiac events.¹² The country has an integrated tobacco programme, also warning people against its dangers through mass media campaigns.²²

Threats

Tunisia's premature CVD mortality rate (11%) is higher than seven of the 12 countries under investigation but lower than the 12% of Cameroon, Namibia and Nigeria and the 14% of South Africa.³⁶ In 2016, the proportional mortality rate of all deaths was 44% for CVD.⁷ The total CVD mortality rate is also much higher than any of the other countries in this project, at 51.5%. The same picture is revealed in the percentage of DALYs as a result of CVD, at almost 22%.

Tunisian men are also the heaviest tobacco users in our study, with more than 65% following this practice. Another CVD indicator that needs attention is Tunisia's high prevalence of raised cholesterol levels. The prevalence of obesity and diabetes is high and driven by environmental factors, nutritional transition and a Westernised lifestyle, which are reasons for concern.³⁴

Weaknesses

Clinical guidelines for CVD prevention within the last five years are lacking, and not all of the essential CVD medicines are available in the public sector.⁹ Although CVD risk stratification and secondary prevention of rheumatic fever and RHD are available at the primary healthcare level, these data have not yet been recorded on the GHO database.

Although a national strategy exists that addresses CVD and their risk factors, there is no dedicated budget to implement the plan. Tunisia has also not implemented a national surveillance system that includes CVD and their risk factors.²¹ No legislation exists mandating health financing for CVD or court orders that protect patients' rights and improved CVD interventions, facilities, health system procedures or resources.

There is an overall lack of information regarding stakeholder action in the advocacy, prevention and management of CVD/NCD or the development and implementation of plans to curb these burdening diseases.

Priorities

Priorities include educating the population through lifestyle

modification and improved training of healthcare practitioners to diagnose and treat patients with diabetes and other NCD, which are urgently needed.³⁴

Since cardiovascular risk factors such as hypertension are highly prevalent in Tunisia, an urgent need to implement innovative strategies to improve awareness, treatment and control of the resultant conditions are encouraged.³⁵ Involvement of civil society and NGOs in the national multi-sectoral co-ordination mechanism for NCD/CVD should be advocated.

This publication was reviewed by the PASCAR governing council and approved by the president of the Tunisian Heart Foundation.

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The researchers were interested to see that over half of the patients who received the drug did not need a shock to restore their regular heart rhythm. They recommend that physicians try the drug cardioversion first, to avoid unnecessary sedation.

‘If I have a patient on a drug infusion, I can see other patients at the same time,’ said Dr Jeffrey Perry, study co-author and senior scientist at the Ottawa Hospital and professor at the University of Ottawa. ‘To do an electrical cardioversion, I need to find another doctor, a nurse and a respiratory therapist, and it takes time to assemble those people.’

The researchers note that patients often have a strong preference for one kind of cardioversion over the other, especially if they need it done regularly. ‘While we believe that there are advantages to trying the drug infusion before the shock, the treatment choice is ultimately a shared decision between the patient and physician,’ said Perry. While

cardioversion is common in Canada, it isn’t as well known in other parts of the world.

‘In some countries, patients with acute atrial fibrillation are sent home with pills to slow their heart rate, while others are admitted to hospital,’ said Stiell. ‘Our study showed that cardioversion in the emergency department is safe and effective. We hope our results convince more physicians around the world to adopt these methods.’

‘Given the crowding which exists in the emergency healthcare setting, the Canadian Institutes of Health Research (CIHR) is proud to support this high-quality research that enhances evidence-informed clinical decisions in the transitions of care for patients with atrial fibrillation,’ said Dr Brian Rowe, study co-author, scientific director of the CIHR’s Institute of Circulatory and Respiratory Health, and professor of emergency medicine at the University of Alberta.

Source: Medical Brief 2020