

Rwanda Country Report

PASCAR and WHF Cardiovascular Diseases Scorecard project

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Abstract

Data collected 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 Rwanda are presented. Furthermore, the strengths, threats, weaknesses and priorities identified from these data are highlighted in concurrence with related sections in the attached infographic. Information was collected using open-source datasets 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 for use in Africa.^{1,2} The Rwanda Heart Foundation, with the assistance of its president and founder, helped in collecting and verifying the data for Rwanda, as one of the participating countries. In this report, we summarise Rwanda's strengths, threats, weaknesses and priorities identified from the collected data, along with needs to be considered in conjunction with the associated sections in the accompanying infographic. Datasets used included open-source data from the World Bank, the World Health Organization (WHO), Institute for Health Metrics and Evaluation, the International Diabetes Federation and government publications.

Part A: Demographics

According to the World Bank (2018), Rwanda is a low-income country with 83% of its people living in rural areas.³

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In 2013, about 56% of the population were living below the US\$1.9-a-day ratio. Life expectancy at birth in 2018 was 67 years for men and 71 years for women.³ The general government health expenditure in 2017 was 2.26% of the gross domestic product (GDP), while the country GDP per capita was US\$772.9 in 2018.⁴

Part B: National cardiovascular disease epidemic The national burden of cardiovascular disease (CVD) and non-communicable diseases (NCD) risk factors

Rwanda's premature deaths attributable to CVD (30–70 years old) were similar to those of Uganda, Zambia and Sudan at 10% in 2012.^{1,5} In 2017, the age-standardised total CVD death rate was 11.9%, which is slightly lower than the neighbouring country, Tanzania (12.9%). The percentage of disability-adjusted life years (DALYs) resulting from CVD was 4.1 and 5.1% for men and women, respectively. The percentage atrial fibrillation (AF) and atrial flutter was 0.12%, while that of rheumatic heart disease (RHD) was 1.0%. However, in 2013, 0.68% of school children, with a mean age of 12.2 years, were identified with RHD.⁶ The total RHD mortality rate was 0.17% of all deaths in 2017 (Table 1).⁷

Tobacco and alcohol

The prevalence of tobacco use in adult men and women (≥ 15 years old) was 19.1 and 7.1%, respectively.⁸ In the 13–15-year-old population, the prevalence was 13.3 and 9.5% in boys and girls, respectively, which is lower than most African countries in our sample for which we have data.⁹ Data on the estimated annual direct cost of tobacco use are not available. The premature CVD mortality attributable to tobacco is 1% of the total mortality rate. The three-year (2016–18) average recorded alcohol consumption per capita (≥ 15 years) was 7.0 litres (Table 1).⁴

Raised blood pressure and cholesterol

In the national 2012–2013 non-communicable diseases STEP survey, 15.9% of the participants was identified with raised blood pressure (BP) (systolic BP ≥ 140 mmHg or diastolic BP ≥ 90 mmHg). Of these participants, 16.8% were men and 15% women, while the rate among the 55–64-year age group increased to almost 40%.⁸ The percentage of DALYs lost because of hypertension was 2.81%, whereas mortality caused by hypertensive heart disease was 1.82%

in 2017.¹⁰ For raised total cholesterol (TC, ≥ 5.0 mmol/l), the prevalence was 2.9% (Table 1), rising to 5.6% in men and 7.4% in women in the 55–64-year age groups.⁸

Physical activity

Physical activity (PA) data from the NCD STEP survey showed that 61.5% of the 15–64-year-old population had high levels, 25.2% moderate and 13.3% low levels of PA.⁸ No data are available for adolescents, ages 11–14 years old. The age-standardised estimate from the WHO Global Health Observatory (GHO) for adults who were insufficiently active (< 150 minutes of moderate-intensity PA per week, or less than 75 minutes of vigorous-intensity PA per week) was 14.6% in 2016 (Table 1).⁴

Overweight and obesity

Data from the Rwanda 2012–2013 NCD STEP survey showed that while 2.8% participants were obese, 14.3% were

overweight and 7.8% underweight. Of these participants, women were mostly obese (4.7%) and overweight (19%) compared to men (0.8 and 9.1%, respectively) (Table 1).⁸ In 2016, the prevalence of overweight [body mass index (BMI) 25 kg/m^2] and obesity (BMI $\geq 30 \text{ kg/m}^2$) in adults 25 years and older was 25.1 and 5.8%, respectively, according to WHO GHO age-standardised estimates.⁴ Far more women (33.5%) than men (15.6%) were overweight, with a similar pattern noticed regarding obese women and men (9.3% vs 1.9%, respectively).⁴

Diabetes

The prevalence of raised blood sugar (≥ 6.1 mmol/l) from the STEP survey was 3.1%,⁸ while that of the population defined with a fasting glucose level ≥ 7.0 mmol/l or on medication (age-standardised), was 4.4% according to WHO GHO estimates.⁴ In 2019, the prevalence of age-adjusted diabetes in adults 20–79 years was 5.1% (Table 1).¹¹

Table 1: Cardiovascular disease indicators for Rwanda

Indicators	Male	Female	Total	Year
Status of the national CVD epidemic				
Premature CVD mortality (30–70 years old) (% deaths)	-	-	10	2012
Total CVD mortality (% of deaths)	9.6	14.5	11.9 (31.8)*	2017
Total RHD mortality (% of deaths)	0.14	0.2	0.17 (.5)*	2017
DALYs attributable to CVD (%)	4.1	5.1	4.6 (14.7)*	2017
AF and atrial flutter (%)	0.13	0.12	0.12 (.5)*	2017
Prevalence of RHD (%)	0.9	1.1	1.0 (.5)*	2017
Tobacco and alcohol				
Prevalence of adult tobacco use (≥ 15 years old) (%)**	19.1 (36.1) ^f	7.1 (6.8) ^f	-	2013
Prevalence of youth (13–15-year-olds) tobacco use (%)	13.3	9.5	-	2018
Estimated direct (healthcare-related) cost of tobacco use in your population (in current US\$)	-	-	-	2018
Proportion of premature CVD mortality attributable to tobacco (%)	-	-	1 (10) ^f	2004
Recorded alcohol consumption per capita (≥ 15 years) (in litres of pure alcohol) (three-year average)	-	-	7.0	2016–18
Raised blood pressure and cholesterol				
Population with raised BP (SBP ≥ 140 mmHg or DBP ≥ 90 mmHg) (%)**	16.8 (24.1) ^f	15.0 (20.1) ^f	15.9	2013
Population with raised TC (≥ 5.0 mmol/l) (%)**	2.4	3.3	2.9 (38.9) ^f	2013
DALYs attributable to hypertension (%)	2.36	3.3	2.81 (8.7)*	2017
Mortality caused by hypertensive heart disease (% of deaths)	0.81	2.94	1.82 (1.7)*	2017
Physical activity				
Adolescents (11–17 years old) who are insufficiently active (< 60 minutes of moderate- to vigorous-intensity PA daily) (%)	-	-	- (80.7) ^f	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) (%)	11	17.6	14.6 (27.5)*	2016
Overweight and obesity				
Adults (15–64 years old) who are overweight (BMI ≥ 25 –< 30 kg/m^2) (%)**	9.1	19.0	14.3 (38.9)*	2013
Prevalence of obesity (BMI $\geq 30 \text{ kg/m}^2$) (%)**	0.8	4.7	2.8 (13.1)*	2013
Diabetes				
Defined population with fasting glucose ≥ 126 mg/dl (7.0 mmol/l) or on medication for raised blood glucose (age-standardised) (%)	4.3 (9)*	4.5 (8)*	4.4	2014
Prevalence of diabetes (20–79 years old) (%)	-	-	5.1 (9.3) ^{f#}	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 data¹⁰

**STEPS data⁸

^fWHO Global data⁴

[#]IDF Diabetes Atlas.¹¹

Part C: Clinical practice and guidelines

Health system capacity

The country had an average of 1.3 physicians and 12.04 nurses per 10 000 in 2017 and 2018, respectively, with 16 hospital beds per 10 000 people in 2006. In Rwanda, locally relevant clinical tools to assess CVD risk and recent clinical guidelines for CVD prevention are available.¹² Guidelines published in 2016 by the Ministry of Health (MoH) for the detection and management of the most common NCD include heart failure, hypertension, cardiomyopathy and AF.¹² Clinical algorithms to manage pharyngitis, acute rheumatic fever and RHD are also incorporated.¹² In 2013, the Minister of Health, Dr Agnes Binagwaho, deplored that 'Health authorities in many countries rely on regional estimates of the burden of RHD given the absence of national disease registries and underreporting or misdiagnosing of acute and chronic cases of RHD'.¹³ Rwanda's participation in a prospective, international, multi-centre, hospital-based registry for RHD and rheumatic fever, the REMEDY study,¹⁴ led to developing a national register of people with a confirmed diagnosis of rheumatic fever and RHD. This register started with post-RHD valve surgery patients who were on anticoagulation.¹⁵ Although there is a system to measure the quality of care provided to people who have suffered acute cardiac events, no national guidelines for the treatment of tobacco dependence exists.⁹ The national guidelines for the integrated and decentralised management of NCD also include the detection and management of diabetes in detail.¹²

Essential medicines and interventions

All the essential medicines for CVD were reported being available within the public health sector in 2016 and 2017.¹⁶ Provision for secondary prevention of rheumatic fever and RHD is available in the public health sector but not for CVD risk stratification or the measurement of TC.⁴

Secondary prevention and management

Almost 16% of hypertensive patients were receiving medical treatment in 2012,⁸ while no information is available about the number of patients with AF on therapy or those with a history of CVD receiving medication. The ongoing implementation of the National NCD policy since 2015 includes integrated and decentralised care and follow up for the most common CVD, using electronic medical records and a health medical information system is expected to improve data collection and processing.^{17,18}

Part D: Cardiovascular disease governance

A national strategy or plan that addresses NCD, CVD and their risk factors specifically has been developed along with a dedicated budget for its implementation.^{4,19} Integrating RHD into the national NCD strategic plan is also underway.²⁰ In each ministry, the government established a Single Project Implementation Unit.²¹ Rwanda also has a national surveillance system that includes CVD and their risk factors.⁸ Although not yet adopted, a draft national tobacco control plan has recently been finalised, and there is a national multi-sectoral co-ordination mechanism for tobacco control.⁹ The

capital city, Kigali, has been chosen as part of an international project for a 'smoke-free city' supported by Vital Strategies and the Bloomberg Foundation since 2019.²²

Collaborative projects for NCD interventions, which include CVD, have been implemented between the MoH and non-health ministries and civil societies in Rwanda.²³ However, the percentage of total annual government expenditure on cardiovascular healthcare is not known.

Rwanda was included in a project, WHO-CHOICE, incorporating a cost-effectiveness modelling tool that gathers national data, which can be used for developing the most effective interventions for leading causes of disease burden.²⁴ The model can be adjusted according to the specific needs of the country and assists policymakers in planning and prioritising services at a national level.²⁴ Whether Rwanda has implemented the model since it became available in 2003 is unknown. However, since 2019, Rwanda has been among the priority countries to become part of the governance mechanism of the United Nations-initiated 'Defeat-NCD Partnership', aiming to support four NCD-related areas, national capacity building, community health scale-up, marketplace and financing.²⁵

Assessment of policy response

No legislation exists that mandates health financing for CVD. However, legislation mandating essential CVD medicines at affordable prices has been implemented.²⁶ Similarly, legislation is employed in areas where smoking is banned, there are visible warnings on tobacco packs, advertising and measures to protect tobacco control policies from tobacco industry interference.⁹ The excise tax of the final consumer price of tobacco products was 54% in 2018,⁹ and 38.9% for alcohol in 2003.²⁷ Policies that ensure nationwide access to healthcare professionals and facilities have been developed,²⁸ as well as policy interventions facilitating PA.²⁹ An original 'car-free day' initiative promoting going green, mass sport and screening NCD risk factors, including hypertension, has been introduced in Kigali city since 2016 and is progressively expanding to smaller cities throughout the country.³⁰

There is no sustainable funding for CVD from taxation or any taxes on unhealthy foods or sugar-sweetened beverages.³¹ No legislation banning the marketing of unhealthy foods to minors exists nor that mandating clear and visible warnings on foods that are high in calories, sugar or saturated fats. No policies have been implemented that ensure screening of individuals at high risk of CVD nor policy interventions that promote a diet to reduce CVD risk.

Stakeholder action

Non-governmental organisation advocacy for CVD policies and programmes in Rwanda is progressing via healthcare services.³² Civil society through the Rwanda NCD Alliance (RNCDA)³³ and other organisations such as Partners in Health, Rwanda are involved in identifying, developing and implementing the national NCD strategic plan.^{25,34} No advocacy champions have been identified for RHD in Rwanda.

Involvement of civil society in the development and implementation of a national CVD prevention and control

plan was discussed at a United Nations General Assembly meeting, where the minister of health of Rwanda indicated the importance of co-ordination.³⁵ The need for civil society's involvement in a national multi-sectoral co-ordination mechanism for combating NCD and reducing their risk factors was iterated in 2015.³² Civil society organisations are regularly part of an informal consultative MoH/Rwanda Biomedical Centre Technical Working Group on NCD.³² However, the draft concept and composition document for a high-level co-ordination mechanism has been prepared but not yet submitted for approval by the government. No data are available on specific activities aimed at a 25% reduction in premature CVD mortality by 2025 by cardiology professional associations. A hypertension survey among adults working at a tertiary institution in Rwanda showed it is possible to reach employees at their workplace. However, there is no indication of hypertension screening by businesses at workplaces.³⁶

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

Strengths

The National NCD Strategic Plan 2014–2019 emanated from the National NCD policy 2013, the Rwandan Health Sector Strategic Plan 2013–2018 and the Rwandan Economic Development and Poverty Reduction Strategy II (EDPRS) 2013–2018.¹⁹ The main objective of the national strategic plan was to develop a robust monitoring and evaluation system to track the NCD burden of disease in the country.¹⁹ The integration of NCD monitoring tools in the national health information system and electronic medical record, and the implementation of the Bloomberg Philanthropies-funded Verbal Autopsy Program are expected to improve morbidity and mortality data collection.³⁷ Moreover, Rwanda has successfully implemented an integrated and decentralised chronic care model for most common NCD and CVD at the district hospital and primary healthcare levels.³⁸

The Rwanda Biomedical Centre is the implementing entity for NCD prevention and control activities in terms of the policy. The NCD division, on the other hand, is responsible for the day-to-day implementation of interventions.¹⁷ The management, monitoring and evaluation of implemented activities are under the supervision of existing organs and structures in the national health system. The focus of this policy includes CVD, and its goal is to alleviate the burden of NCD and their risk factors along with protecting the Rwandan population from related premature morbidity and mortality.¹⁷

In 2015, a team of recognised experts developed national NCD guidelines according to international standards.¹² A national surveillance system, the STEP survey, including CVD and their risk factors, has also been implemented.⁸

For a country that underwent the worst genocide in 1994, Rwanda has made tremendous progress regarding financial access and risk protection by strengthening pre-payment mechanisms, which include community-based health insurance and other health insurance schemes, also covering NCD.³⁹ Rwanda is one of a few African countries that has developed a sports policy.²⁹ Probably this was a way in

achieving post-conflict reconciliation and supporting the role that sport plays in the health and well-being of communities to reduce CVD risk.⁴⁰

Rwanda is benefiting from multilateral initiatives for national NCD capacity building such as the Smoke-free City project, and the Verbal Autopsy programme.^{22,37} Also, the United Nations-anchored multilateral defeat-NCD partnership kicked off recently, as well as the establishment of regional NCD training, specialised care and research-driven centres of excellence through the East African community.^{34,41}

Threats

In Rwanda, mortality data became available from hospital registries to demonstrate that NCD are an important cause of death and place a heavy burden on the country, along with prevention and control services, which are limited.¹⁷ In 2016, NCD were estimated to account for 44% of all deaths, of which 14% included CVD.¹⁶

Tobacco use among adolescent men in 2018 was about 13%, which is slightly lower than the global consumption of 18.2% for this group.⁴ In 2012, 19% of adult men used tobacco, while 7% of women adopted the habit. The recorded average (three-year) alcohol consumption per capita was 7 litres pure alcohol, which is more than most of the other African countries under investigation.⁴

Because of population ageing, there has been an increase in the incidence of NCD.⁴² The prevalence of hypertension, a leading cause of CVD, is high in Rwanda.⁷ Other risk factors are diabetes, obesity, salt intake, smoking, lack of exercise and a low intake of fruit, vegetables and unsaturated fats.¹⁹ The age-standardised estimate for raised BP in 2015 was 26.7%, which is higher than the global level (22.1%) but slightly lower than that for Africa (27.4%), whereas the prevalence among 15–64-year-olds was about 16% in 2013.⁴⁸ The prevalence of obesity was more predominant in urban areas (10.2%) and in Kigali city (7.7%), with 14.3% of the adult population, 15–64 years old, being overweight.

Compared to neighbouring countries Uganda (0.96%) and Tanzania (1.01%), Rwanda had a slightly higher prevalence of RHD, although low at 1.02%. Total RHD mortality rate was also higher than these countries (0.17 vs 0.14% for both countries), and that of hypertensive heart disease (1.82 vs 1.13% for Uganda and 1.43% for Tanzania).¹⁰

Weaknesses

Although all 10 essential CVD drugs are available, these are only at the district hospital level (public sector) and not always at primary healthcare centres.⁴³

A national tobacco control plan and guidelines to treat tobacco dependence are lacking, and sustainable funding for CVD from taxation of tobacco or other 'sin' products does not exist. However, there is a national multi-sectoral co-ordination mechanism for tobacco control.⁹

Primary healthcare facilities generally do not provide TC measurements, and CVD risk stratification at this level is also not prioritised. Rwanda, along with Cameroon, Mozambique, Namibia and Sudan, has not yet introduced a policy regarding the taxation of unhealthy foods or sugar-sweetened beverages to combat obesity and other related NCD.⁴⁴

Legislation banning the marketing of unhealthy foods to minors and mandating clear and visible warnings on foods that are high in calories, sugar or saturated fats are also lacking. Policy interventions to reduce CVD risk through promoting a healthy diet have not yet been introduced.

Priorities

Rwanda's vision is to have the entire population protected from premature morbidity and mortality related to NCD. The aim is to improve access and quality of care to reach their target along with improved general knowledge about prevention of risk factors and early detection.¹⁹

Other strategies to reduce NCD are developing an inter-sectoral and decentralised policy, which includes prevention and management of NCD, a national protocol for NCD, and development of healthcare providers' skills.⁴²

Although the health sector has accomplished significant achievements, the following areas need to be addressed if the quality of NCD service delivery is to be improved:

- integration and accessibility of NCD services at all levels of the healthcare system and specialised services
- high NCD costs
- basic equipment and specialised infrastructure for NCD
- essential drugs and advanced NCD treatment
- accurate NCD data management.¹⁷

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