

# Hypertension Mortality in Rwanda, 2023: Age, Gender, and Regional Disparities

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## EXECUTIVE SUMMARY

Hypertension is an escalating public health challenge in Rwanda, now contributing significantly to cardiovascular disease-related mortality. This report looks at national data from 2023 to assess the magnitude and distribution of hypertension-related deaths, focusing on age, gender, and disparities among districts.

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- The findings reveal that Rwanda's overall hypertension mortality rate is 5.4 per 100,000, with women experiencing higher rates than men.
- Mortality rises significantly with age, reaching 97.2 per 100,000 among those aged 70 years and above, and is highest in urban areas like Kigali City and Nyarugenge District.
- Geographic and urban-rural disparities suggest lifestyle factors and reporting differences contribute to mortality variations, highlighting the need for targeted health interventions.

Hypertension-related mortality in Rwanda is marked by age, gender, and regional disparities. Addressing these disparities through targeted prevention, improved healthcare access, early detection, adequate management, and enhanced data systems is crucial to reducing premature deaths and improving population health.

## INTRODUCTION

Hypertension remains a public health concern in Rwanda, contributing to a substantial portion of cardiovascular disease-related deaths [1,2]. The prevalence rate of hypertension in Rwanda has been increasing over the last decade, rising from 15,300 per 100,000 people in 2013 to 16,800 per 100,000 people in 2022 [3,4]. This further strains the health system, already burdened by infectious diseases [5]. Understanding the magnitude and distribution of hypertension-related mortality is crucial for developing targeted interventions and

policies aimed at reducing premature mortality [6]. This report aims to assess the magnitude and distribution of hypertension-related mortality in Rwanda by examining mortality disparities across age groups, genders, and geographic regions.

## METHODS

We reviewed all hypertension-related mortality data from the Health Management Information System (HMIS) collected in 2023.

The HMIS, based on the District Health Information Software 2 (DHIS2) platform [7],

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captures health data from all public and many private facilities, including health posts, health centers, and hospitals. It also integrates data entered by community health workers (CHWs) through mobile tools or paper forms. HMIS is linked with other systems like electronic Logistics Management Information System (eLMIS), Rapid Short Message Service (RapidSMS), and Electronic Medical Records (EMRs). Data from HMIS enable evidence-based decision-making and support efficient health systems management across Rwanda’s healthcare network.

A death was determined as hypertension-related from the Medical Certification of Cause of Death (MCCOD) completed at health facilities and reported to the HMIS in 2023. The hypertension-related mortality rate is calculated by dividing the number of deaths by the total population for each demographic category. Mortality rates are

expressed per 100,000 people. Analysis explored differences in mortality rates by age, gender, and district of residence. Age was categorized into four groups: under 35, 35-49, 50-69, and 70 years or older. Gender was categorized as male or female.

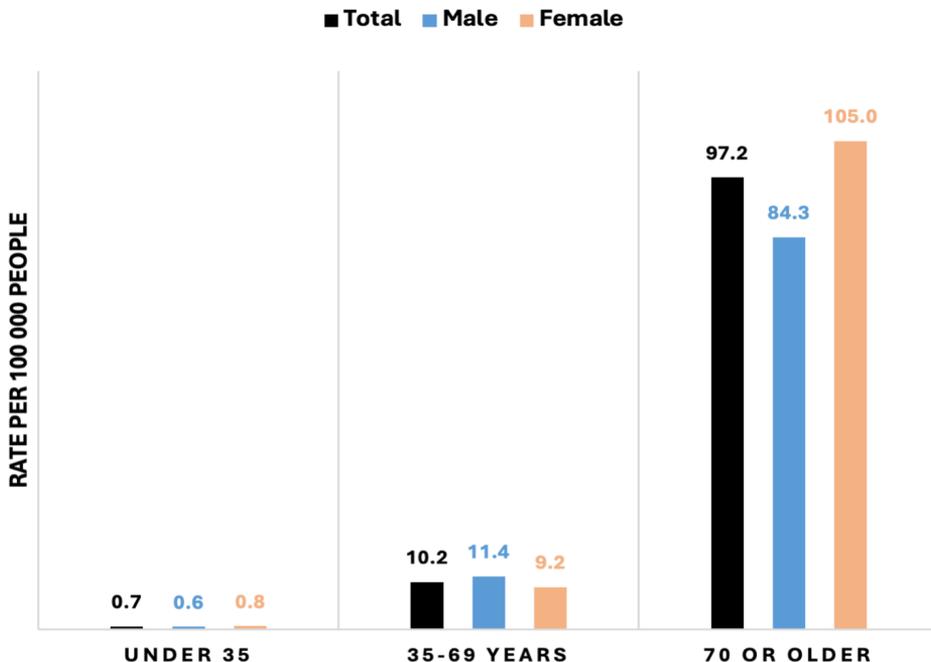
**POPULATION DISEASE TRENDS**

Table 1 shows that the mortality rate is higher for females than for males, at 6.0 and 4.8 per 100,000, respectively. The overall mortality related to hypertension is 5.4 per 100,000 people.

Figure 1 shows that hypertension-related mortality increases with age, peaking among individuals aged 70 and above, where women have higher rates (105.0/100,000) than men (84.3/100,000). Mortality is low in those under 35, but between ages 35–69, men exhibit higher rates (11.4/100,000)

**Table 1:** Hypertension mortality rate by Gender per 100,000 people

	Population	Number of Deaths	Rate per 100,000 population
Male	6,728,476	320	4.8
Female	7,134,259	430	6.0
Overall	13,862,735	750	5.4



**Figure 1:** Hypertension-related mortality rate (per 100,000 people) by age and sex, 2023

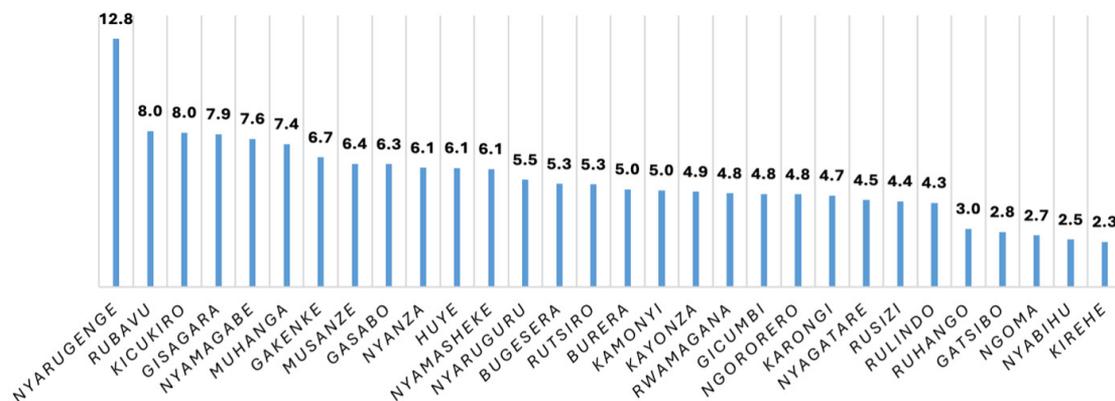


Figure 1: Hypertension mortality rate (per 100,000 people) by district in Rwanda, 2023

than women (9.2/100,000). Figure 2 indicates disparities in mortality rates across Rwandan districts. Nyarugenge has the highest mortality rate (12.8%), followed by Rubavu, Kicukiro, and Gisagara, all with a mortality rate of around 8.0. Kirehe has the lowest rate (2.3%), followed by Nyabihu, Ngoma, Gatsibo, and Ruhango, all ranging between 2.5% and 3.0%.

## DISCUSSION

The results indicate significant disparities in hypertension-related mortality across districts and age groups. Mortality is highest in Kigali City (8.2%), particularly in Nyarugenge (12.8%), likely due to urban lifestyle factors such as poor diet, stress, and limited physical activity [6]. In contrast, rural areas like Kirehe (2.3%) exhibit lower mortality, possibly due to healthier living conditions in the countryside [5]. Age is a major determinant, with 97.2 deaths occurring in individuals 70 or older, who have the highest mortality rate of 97.2 per 100,000 people, while younger age groups experience minimal impact. The association with age can be explained by the physiological changes and cumulative effects of elevated blood pressure on cardiovascular organs [8].

The observed gender differences in hypertension-related mortality rates are influenced by both behavioral and biological factors. Middle-aged men tend to have higher exposure to risk factors like tobacco use, alcohol, and poor health-seeking behavior, which worsen hypertension outcomes [9,10]. In contrast, older women's higher mortality

may be linked to post-menopausal hormonal changes that increase cardiovascular risk, and potential differences in healthcare access [11].

The findings highlight the need for targeted interventions, especially for older adults and urban populations, focusing on hypertension management, lifestyle education, and improved healthcare access to reduce premature mortality [12].

**Limitations:** The Civil Registration and Vital Statistics (CRVS) system is more developed in Kigali than in rural areas. Rural deaths may lack proper MCCOD, which could lead to potential underreporting and misclassification of mortality causes.

## RECOMMENDATIONS

The Ministry of Health and its agencies should strengthen hypertension prevention and awareness by conducting campaigns that promote healthy lifestyles, including low-salt diets, regular exercise, and stress management. It is also recommended that campaigns be implemented on the risks of hypertension and the importance of routine blood pressure checks by local CHWs or by visiting the nearest health post or health center where routine blood pressure checks are available. For further assessment and treatment, people are referred to district hospitals. In addition, the Rwanda Biomedical Centre (RBC) and the Ministry of Health regularly organize outreach campaigns where free blood pressure checks are offered. Many private clinics and pharmacies also provide

accessible blood pressure checks, especially in urban areas.

Additionally, it is advised to enhance blood pressure check services to ensure early diagnosis for timely management, starting in areas with the highest mortality burden. These services can be integrated into routine care at all health facilities, expanding community-based checking through trained CHWs, organizing outreach campaigns in high-burden districts, partnering with private clinics and pharmacies, and using digital health tools to improve tracking and follow-up.

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