# Technical Analysis Report: GCC Noncommunicable Disease (NCD) Burden in Global Context

# 1. Introduction

Noncommunicable diseases (NCDs) such as cardiovascular diseases, cancers, chronic respiratory conditions, and diabetes are responsible for almost 50 percent of global deaths, according to the World Health Organization (WHO). In high-income regions like the Gulf Cooperation Council (GCC), these diseases have become the predominant cause of mortality, placing increasing pressure on national health systems. Despite significant investments in healthcare infrastructure and services across GCC member states, there remains a gap in preventive strategies and early detection practices. This project investigates the NCD burden in the GCC compared to global, MENA, and OECD regions. It aims to evaluate whether the region's mortality profile aligns with its risk exposure, economic capacity, and policy landscape.

This analysis aligns with Bahrain Vision 2030, which prioritizes health system sustainability and emphasizes improved quality of life through preventive health measures. Understanding NCD trends within the GCC and Bahrain supports the vision's strategic goal of reducing preventable health burdens and promoting a healthier, more productive population.

# 2. Problem Statement

The GCC countries experience a high proportion of deaths due to NCDs despite relatively strong healthcare spending. However, outcomes vary significantly between nations, and there is limited insight into how these outcomes compare globally or whether national policies are effectively mitigating risk. This project addresses the following SMART problem:

To assess and compare the burden of NCDs across GCC countries relative to global benchmarks in terms of mortality, risk factor prevalence, and health spending, using validated data sources, in order to identify policy and prevention gaps by June 2025. The results will inform evidence-based planning that contributes to public health strategies under Bahrain Vision 2030.

# 3. Objectives

- Quantify the burden of NCDs in the GCC using mortality rate per 100,000 population and percent of total deaths

- Compare GCC data with global, MENA, and OECD counterparts

- Examine the relationship between NCD risk factors, healthcare spending, and mortality outcomes

- Analyze top NCD causes by country to reveal localized threats

- Evaluate policy effectiveness using national NCD strategies vs risk factor data

- Deliver actionable recommendations to improve GCC health policy alignment with risk burden

- Support Bahrain’s national health development goals as stated in Vision 2030

# 4. Target Audience

- GCC Ministries of Health and Public Health Directorates

- Regional and international health policymakers

- World Health Organization (WHO) regional offices

- Healthcare planning departments and epidemiologists

- Academic institutions and think tanks focused on public health

- Bahrain Economic Vision 2030 stakeholders and strategic planners

# 5. Datasets

Multiple datasets were used in the analysis:

1. \*\*WHO Mortality Database (ICD-10 Coded):\*\*

- Source: WHO Global Health Observatory

- Fields: Country, Year, Cause of Death (ICD-10), Age, Sex, Death Counts

- Types: String, Integer, Categorical

2. \*\*Population Data:\*\*

- Source: World Bank 2023 population estimates

- Fields: Country, Population (Total and Age-Group specific)

- Types: String, Integer

3. \*\*WHO NCD Country Profiles (2020):\*\*

- Fields: Obesity (%), Diabetes (%), Physical Inactivity (%), Tobacco Use (%), NCD Policy Presence

- Types: String, Float, Boolean

4. \*\*Health Spending Data:\*\*

- Source: World Bank and OECD

- Fields: Country, Health Spending (% GDP)

- Types: String, Float

All datasets were either sourced from publicly accessible portals or downloaded as CSV files and reviewed for data quality.

# 6. Data Handling

- Merged and cleaned mortality records from WHO ICD-10 datasets (Parts 5 and 6)

- Mapped ICD-10 codes to NCD categories: Cardiovascular, Cancer, Diabetes, Respiratory

- Aggregated death counts by country, year, sex, and age group

- Joined population data using a Country-Year key to normalize deaths per 100,000

- Created a unified data model in Power BI, aligning all dimensions across mortality, risk, and health system data

- Addressed missing values by excluding incomplete country-year entries and using WHO estimates where appropriate

- Validated country codes and names to ensure consistency during merges

# 7. Analysis and Findings

- Global vs GCC Comparison: GCC countries report a high percentage of deaths from NCDs, often above 75 percent, similar to OECD levels, despite moderate per capita mortality rates

- Top Causes of Death: Cardiovascular disease and diabetes are leading killers in the GCC, especially in Kuwait, Saudi Arabia, and Bahrain

- Per Capita Mortality: NCD death rates per 100,000 reveal Kuwait and Saudi Arabia as regional outliers

- Demographics: Male middle-age and older groups exhibit disproportionately high mortality rates, indicating missed prevention opportunities

- Risk Factors: The GCC has among the highest obesity and diabetes rates globally. Inactivity and tobacco use further exacerbate the risk

- Policy vs Risk Exposure: Despite all GCC countries having national NCD strategies, their risk levels remain high, suggesting gaps in implementation

- Healthcare Spending: Higher spending does not correlate with improved NCD outcomes, underscoring inefficiencies in preventive care investment

# 8. Recommendations

- Strengthen national screening programs for early detection of NCDs

- Integrate behavioral health interventions into primary care services

- Improve policy implementation monitoring and enforcement mechanisms

- Promote public health campaigns focused on nutrition, physical activity, and smoking cessation

- Enhance health data systems for more granular and timely tracking of mortality and risk

- Align NCD interventions with Bahrain Vision 2030 targets for quality of life and economic productivity

# 9. Limitations and Assumptions

- Some country-year combinations lacked full ICD-10 reporting and were excluded

- Mortality data is not age-standardized across all countries, potentially biasing comparisons

- Assumes population denominators are accurate and up to date as per World Bank estimates

- Regional averages were calculated using weighted and unweighted means where relevant

- Data on policy enforcement and funding was not available and inferred based on national statements

# 10. References

- World Health Organization. WHO Mortality Database. https://www.who.int/data/data-collection-tools/who-mortality-database

- WHO Global Health Estimates. https://www.who.int/data/gho

- WHO NCD Country Profiles (2020). https://www.who.int/publications/i/item/9789240001379

- Institute for Health Metrics and Evaluation (IHME). Global Burden of Disease Study. https://www.healthdata.org/gbd

- World Bank Open Data. https://data.worldbank.org

- OECD Health Statistics. https://www.oecd.org/health/

- Bahrain Economic Vision 2030. https://www.bahrain.bh/wps/portal/Vision2030