EE262 Cost-Effectiveness of Modifying Cardiovascular Disease Risk Factors in Qatar Using the Productivity-Adjusted Life Years Metric

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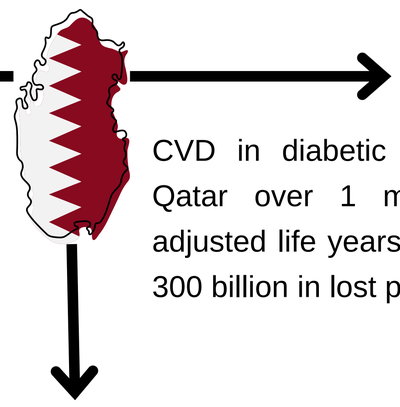
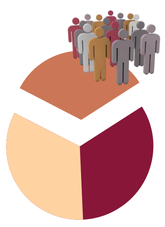
Background

Projections showcase an increase in prevalence from 17.8% in 2023 to 29.5% (84,516 persons) by 2050 among adult Qataris aged 20-79 years



CVD in diabetic adults could cost Qatar over 1 million productivity-adjusted life years (PALYs) and QAR 300 billion in lost productivity by 2032



One-third of adults in Qatar have three or more major cardiovascular disease risk factors

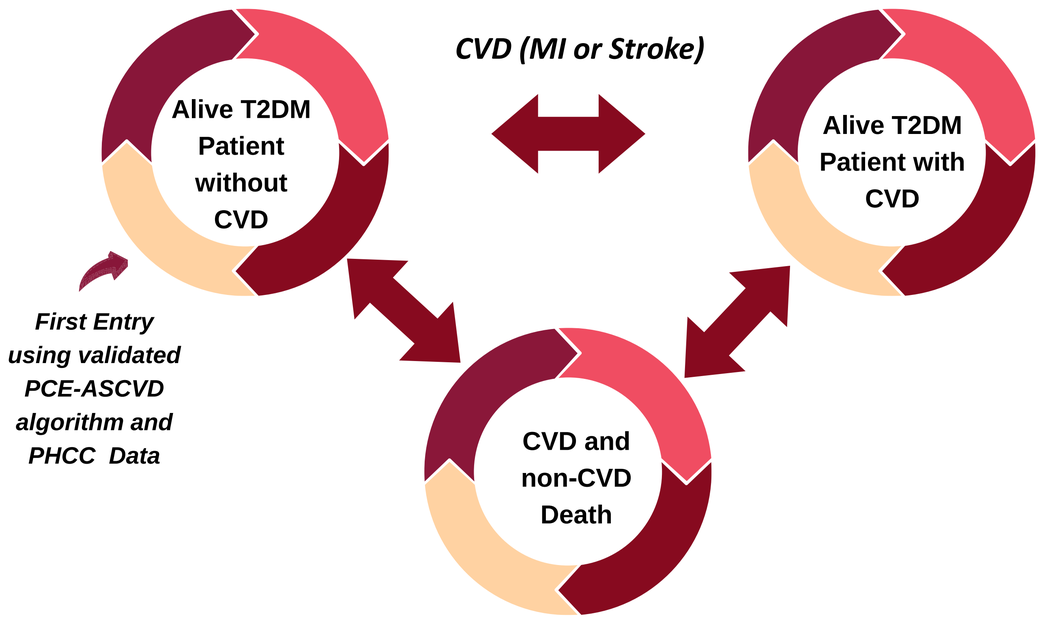
Objectives

The study aims to deploy a 10-year dynamic modeling framework to:

- Assess the epidemiological impact of T2D-related CVD on working-age individuals in Qatar using the PALY metric
- Evaluate the cost-effectiveness of four interventions designed to reduce the CVD burden from 2024 to 2033

Methods

Utilizing a preexisting Markov dynamic model (1)



Four interventions were assessed and modeled

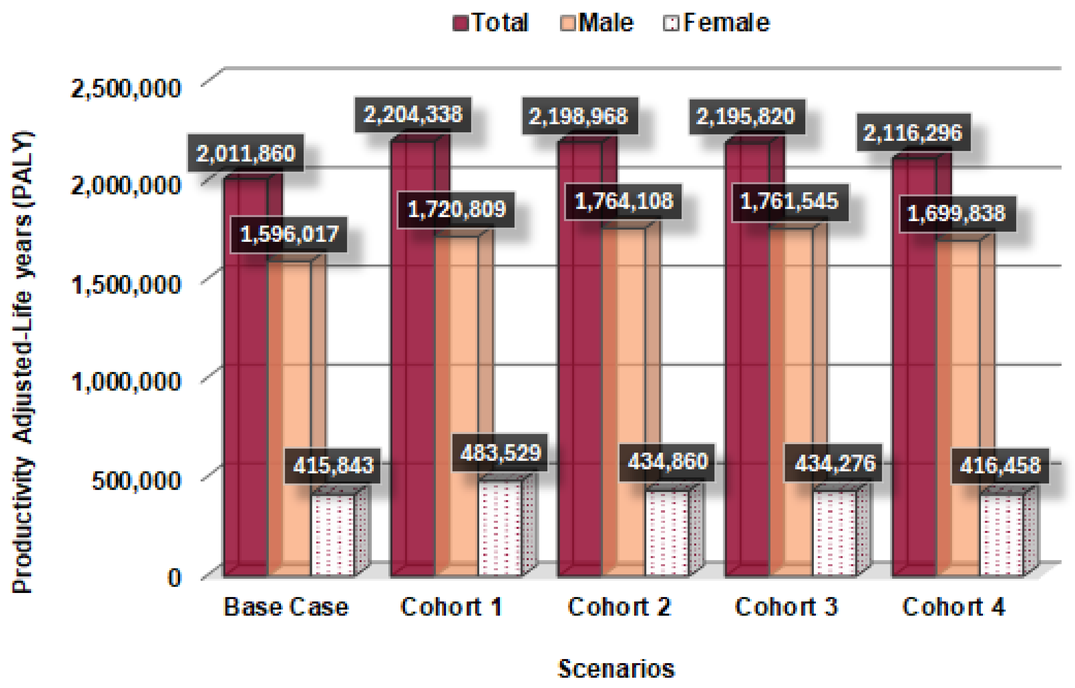
Scenario	Definition
Intervention 1	The model assumed a 9.5 % reduction in the incidence of type 2 diabetes, through lifestyle modification
Intervention 2	The model assumed a 17 % reduction in hypertension, through intensive SBP target levels
Intervention 3	The model assumed a 19 % reduction in the number of smokers, through smoking cessation
Intervention 4	The model assumed a 1 mmol/L reduction in LDL-Cholesterol levels, through statin therapy.

- **Perspective:** Healthcare and societal perspective
- **Outcome measure:** Productivity-Adjusted Life Years (PALYs)
  - Based on: Absenteeism, Presenteeism, Workforce dropout

[ICER] Incremental Cost-Effectiveness Ratio, [GDP] Gross Domestic Product

Results

PALYs in the study intervention cohorts, over 10 years



ICERs with study interventions (QAR/PALY)

Intervention	ICER (Men)	ICER (Women)	Cumulative Discounted ICER	95% CI
Lifestyle Modification	QAR 95,435	QAR 107,451	QAR 202,886	196,609 – 209,163
SBP Reduction	QAR 102,705	QAR 89,378	QAR 192,083	185,919 – 198,247
Smoking Cessation	QAR 102,538	QAR 88,482	QAR 191,020	184,119 – 197,920
LDL-C Reduction	QAR 112,480	QAR 116,279	QAR 228,759	221,659 – 235,858

- **Key insights:**
  - All interventions were cost-effective
  - Smoking cessation had the lowest ICER
  - LDL-C reduction was the least efficient

Limitations

- PCE - ASCVD risk tool not validated in Qatar
- Recurrence estimates based on REACH registry

Conclusion

- This is the first PALY-based cost-effectiveness study in MENA region
- SBP control and smoking cessation gave the highest productivity gains
- PALYs capture both health and economic benefits
- Results support preventive health investment in Qatar
- Findings align with Qatar's National Health Vision 2030

Reference

1. Abushanab D et al. Unraveling the future productivity burden of cardiovascular disease in Qatar: Investigating the modifiable risk factors control in type 2 diabetes. Am J Prev Cardiol 2025;22:100961

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