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ReFReCA
Repositorio para la Vigilancia de Factores de Riesgo de Enfermedades Crónicas en Colombia, el Caribe y Las Américas.

EXCESS MORTALITY DUE TO DIABETES DURING THE COVID-19 PANDEMIC IN COLOMBIA. AN ECOLOGICAL STUDY.

AN ANALYSIS OF THE REFRECA PROJECT

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EpiDiab

Background

The COVID-19 pandemic has meant one of the most important crises in Public Health. Patients with diabetes are at increased risk of mortality due to COVID-19.

General and specific objective

General objective: Describe the epidemiological behavior of mortality from diabetes mellitus in Colombia during the COVID-19 pandemic (year 2020) compared to the period 2015-2019. **Specific objectives:**

1. Determine the age-adjusted mortality rates according to the ICD-10 international classification of diabetes for the period 2015-2019 and the year 2020 in Colombia.

2. To estimate the absolute and relative change in mortality rates from diabetes in Colombia in the year 2020 compared to the period 2015-2019 according to the ICD-10 classification.

3. To estimate the percentage of excess mortality from diabetes in Colombia for the year 2020 compared to the period 2015-2019 according to the ICD-10 classification.

4. Establish an exploratory ecological analysis between the mortality rates from Diabetes in the year 2020 and the sociodemographic and clinical indicators at the departmental level.

Methodology

Study design: Descriptive-ecological study of secondary sources at the population level.

Population: Patients who died from Diabetes in the Colombian territory during 2015 to 2020. The cases were determined according to the basic cause of death with the ICD-10 codes (E10 to E14) corresponding to Diabetes.

Data source: Deaths from diabetes were collected from the vital statistics reports of the National Administrative Department of Statistics (DANE). The population projections were identified from 2018 National Census. The variables of the ecological exploratory analysis were extracted from DANE and the High-Cost Account at the departmental level.

Statistical analysis plan

Specific objective 1: Diabetes mortality rates were calculated according to the ICD-10 classification per 100,000 population for the period 2015-2019 and for the year 2020. The direct method was used to adjust rates with the standard population of the U.S.

Specific objective 2: Relative and absolute change in mortality rates between both time periods was calculated.

$$\textbf{Relative change} = \frac{Rate\ year\ 2020 - Rate\ period\ 2015\ to\ 2019}{Rate\ period\ 2015\ to\ 2019} * 100$$

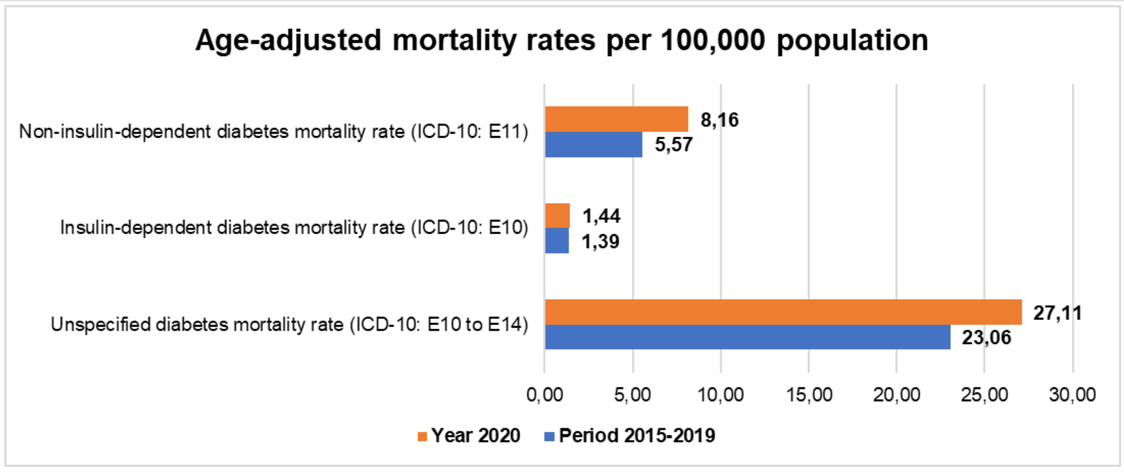
$$\textbf{Absolute change} = Rate\ year\ 2020 - Rate\ period\ 2015\ to\ 2019$$

Specific Objective 3: The moving average of expected deaths from diabetes from the period 2015-2019 was calculated, using the endemic channel methodology to estimate excess mortality.

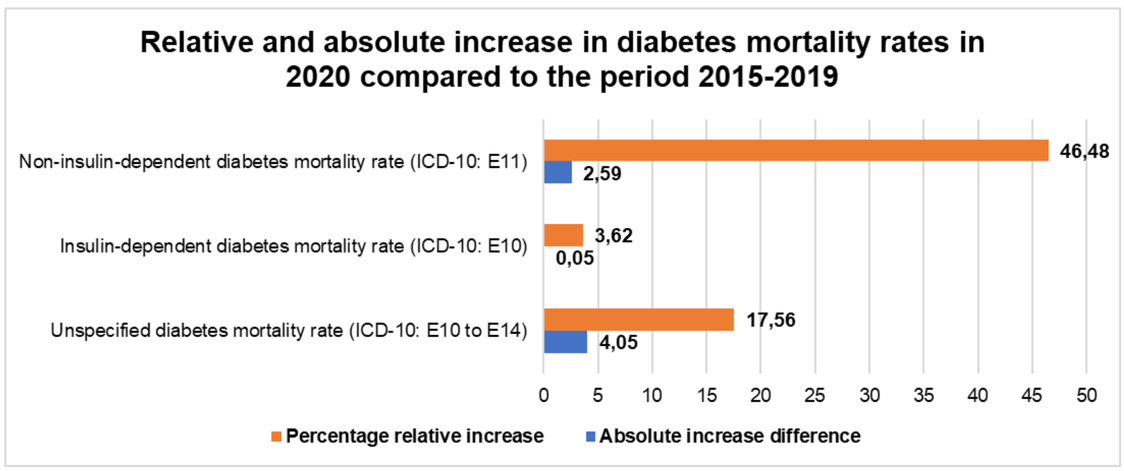
$$\textbf{Percentage excess mortality} = \left(\frac{Observed\ deaths\ year\ 2020}{Expected\ deaths\ period\ 2015 - 2019} - 1\right) * 100$$

Specific objective 4: Spearman's rank correlation coefficient between the adjusted rates of mortality from Diabetes for the year 2020 and health indicators at the departmental level.

Results

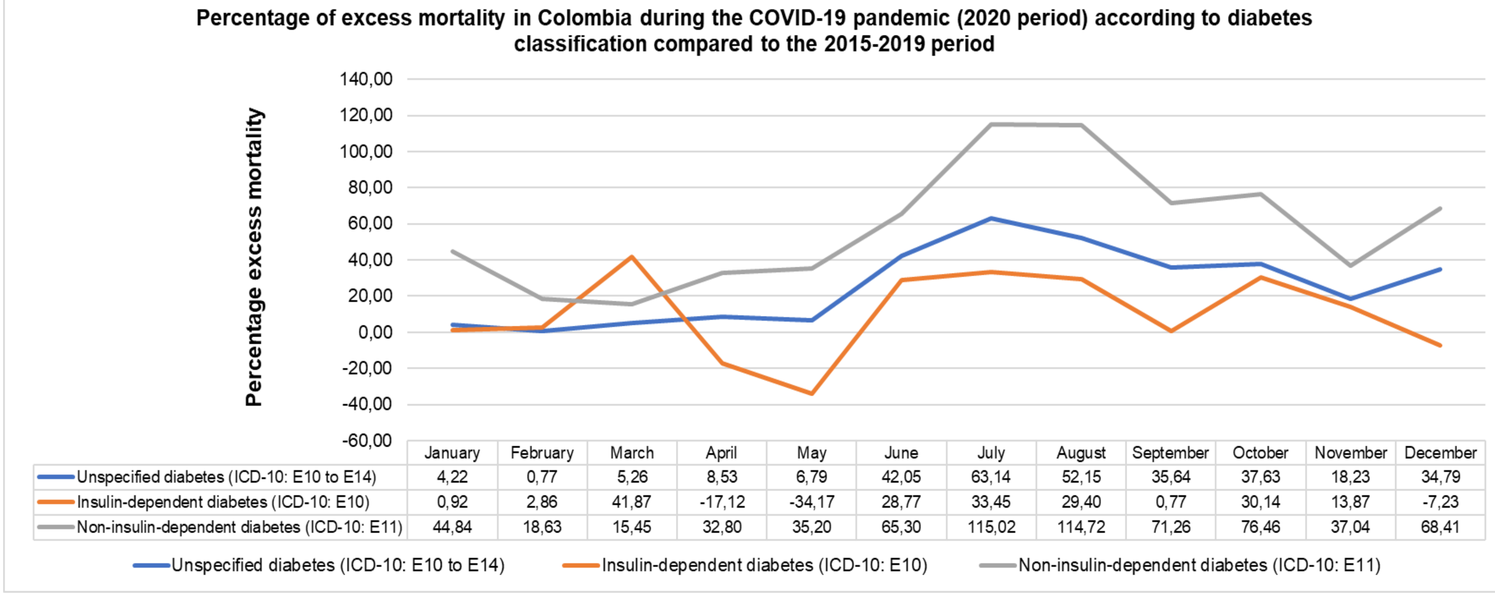


Specific objective 1. Figure 1. Age-adjusted diabetes mortality rates per 100,000 population for the year 2020 and the period 2015-2019



Specific objective 2. Figure 2. Absolute and relative increase in age-adjusted diabetes mortality rates for the year 2020 compared to the period 2015-2019

Excess mortality: Unspecified diabetes	**Excess mortality:** Insulin-dependent diabetes	**Excess mortality:** Non-insulin-dependent diabetes
25,85%	**9,98%**	**57,68%**



Specific objective 3. Figure 3. Percentage excess mortality from diabetes for the year 2020 compared to the period 2015-2019

Departmental-level variables	Spearman's rank correlation coefficient
Adjusted mortality rate for Diabetes year 2020	1
COVID-19 mortality rate*	0,571
Unsatisfied basic need	0,195
Poverty index	0,099
HbA1c measurement in the last 6 months	-0,031
HbA1c goal less than 7%**	-0,499
LDL measurement last year	-0,134
LDL goal less than 100 mg/dl	-0,102
Creatinine measurement in the last year	-0,201

Specific objective 4. Figure 4. Spearman's rank correlation coefficient between the mortality rates from Diabetes in 2020 and sociodemographic and health indicators at the departmental level. *Moderately positive correlation **Moderately negative correlation

Conclusions

Given the high mortality burden in patients with diabetes during COVID-19, it is necessary to develop public health strategies that guarantee timely metabolic control and adequate monitoring of chronic and infectious comorbidities. Analytical studies are required that can determine the causal effect of COVID-19 on the increase in population mortality in diabetes.