MUNICIPAL AND DEPARTMENTAL PREDICTORS ASSOCIATED WITH THE PREVALENCE OF DIABETES MELLITUS IN COLOMBIA: A CROSS-SECTIONAL ANALYSIS.

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Background: Scientific evidence on contextual predictors of diabetes related to different levels of geographic location in Colombia is scant. Therefore, the objective of the study was to analyze the municipal and departmental factors associated with the prevalence of diabetes in Colombia.

Methods: Multilevel, analytical cross-sectional study using data from the 2015 National Nutritional Survey. The prevalence of diabetes and the percentage of patients with Body Mass Index (BMI) of 20-25 kg/m2 municipal was collected from the Colombian High-Cost Account for the year 2021. The proportion of individuals aged 60 years or older and the proportion of women for each municipality was estimated from the 2018 National Census population projections. We developed a two-level data structure, level 1 (municipalities) and level 2 (departments). We fit a multilevel linear regression model with random intercepts. We report the regression coefficients with 95% CI, the variances of both levels and the intraclass correlation coefficient (ICC).

Results: The ICC of the null model was 25.52%. The level 1 predictors statistically associated with diabetes prevalence were the proportion of patients with adequate BMI control (beta coefficient -0.01 (-0.01; -0.00)), the proportion of individuals aged 60 years or older (beta coefficient 0.02 (0.002; 0.03)), and the proportion of women (beta coefficient 0.20 (0.17; 0.24)) with an ICC of 20.66%. After adjusting for level 1 predictors, the proportion of households with experience of self-consumption of food was the contextual predictor (level 2) associated with diabetes prevalence (beta coefficient -0.03 (-0.04; -0.01)) with an ICC of 16.67%. That is, the greater the proportion of households that produce food at home at the departmental level, the lower the prevalence of diabetes at the municipal level.

Conclusions: Contextual aspects, such as demographic characteristics and food sovereignty, should be integrated into public health strategies for the prevention and control of diabetes.

Table 1. Multilevel linear regression model results

	Null model	Model with municipality predictors	Model with municipality and department predictors
Fixed effects	**Coefficients (95% IC)**	**Coefficients (95% IC)**	**Coefficients (95% IC)**
Intercept	1.40 (1.17 to 1.64)	-9.79 (-12.03 to -7.53)	-9.14 (-11.39 to -6.88)
Level 1 (municipalities)			
Proportion of BMI 20-25 kg/m^2	---	-0.01 (-0.01 to -0.00)	-0.01 (-0.01 to -0.00)
Proportion 60 years or more	---	0.02 (0.002 to 0.03)	0.02 (0.00 to 0.03)
Female proportion	---	0.20 (0.17 to 0.24)	0.20 (0.18 to 0.23)
Level 2 (departments)			
Proportion of self-consumption of food*	---	---	-0.03 (-0.04 to -0.01)
Random effects	**Variance**	**Variance**	**Variance**
Level 1 (municipalities)	1.08	0.96	0.95
Level 2 (departments)	0.37	0.25	0.19
Intracluster correlation coefficient (ICC)**	25.52%	20.66%	16.67%
Relative change variances* **			
Level 1 (municipalities)	---	11.11%	12.02%
Level 2 (departments)	---	32.43%	48.65%
Relative change ICC	---	19.04%	34.68%
Goodness of fit			
Akaike	3346.585	3199.075	3198.477

*Percentage of households that implemented protective factors for food security based on self-Consumption, such as gardening for food production or animal husbandry and ways other than purchasing to obtain food (ENSIN Survey 2015).

**ICC = Variance level 2 / (Variance level 1 + Variance level 2) *100

***Relative change variances = Null model variance – Current model variance / Null model variance