

The prevalence and *emic* understanding of diabetes mellitus in rural Guatemala

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Abstract

Objectives:

- 1) Gauge an estimate of the prevalence of diabetes mellitus and its risk factors in rural communities in Sololá, Guatemala.
- 2) Enhance our understanding of how the indigenous Tz'utujil and Kaqchikel people of Sololá, Guatemala make sense of diabetes mellitus etiology, symptoms and resources.

The results of this study will help inform Hospitalito Atitlan's diabetes prevention program of the prevalence of diabetes mellitus (DM) in its target communities and identify any sub-groups within these communities that are particularly susceptible to DM. In addition, the qualitative results of this study will provide information useful for the development of culturally appropriate DM education modules.

Background

Diabetes mellitus has become endemic in Latin America. While subsistence based diets and active lifestyles have long acted as protective factors against diabetes, recent shifts in dietary patterns and lifestyles have left indigenous communities particularly vulnerable to the negative health effects of high-glycemic diets.¹ In addition, my previous research and experience in Guatemala has shown that the Maya T'zutujil and Kaqchikel people of Guatemala have an alternative explanatory model for diabetes that may limit practitioners' ability to convey and articulate effective clinical recommendations for DM.

This study is a product of a partnership between the Guatemala Health Initiative (GHI) and Hospitalito Atitlan.

Table 1. Published prevalence of DM in Guatemala and other Latin American countries.²

Country	Prevalence adjusted to national population (%)	Prevalence adjusted to world population (%)
Guatemala	9.0	10.9
Ecuador	5.7	5.9
Colombia	7.1	7.3
Mexico	11.8	12.6
Venezuela	6.6	7.0
Brazil	9.0	9.2

Methods and Materials

Sampling method: A spatially random stratified sample was obtained using a script that generated random coordinates on gridded maps of each community. Once the necessary random coordinates were generated and the points were plotted, the following steps were taken

- 1) Approach the home or business nearest to each point.
 - a. If reaching a certain point is impossible or poses a security risk, continue to the next point and generate a new random coordinate.
- 2) Ask the first person 18 years or older who answers the door if they would like to participate in the study.
- 3) If he or she does not wish to participate, continue right until a willing participant is found.

Sample size: 400

Sampling frame: The Maya Tz'utujil communities of San Pablo, San Juan, San Pedro and the Maya Kaqchikel communities of San Antonio, Santa Catarina and San Lucas (119,000 residents total).

Data collected:

Qualitative data: A short semi-structured interview was used to gauge participants beliefs on diabetes etiology, its symptoms, and knowledge of resources available to diabetics.

Clinical indicators of diabetes and its risk factors : Body mass index (BMI), non-fasting capillary glucose and glycated hemoglobin (hA1c) level

- Cut-off point for clinical indication of DM: hA1c level > 5.9%
- Cut-off point for clinical indication of obesity: BMI > 30 kg/m²

Demographic information: Age, sex, ethnicity, language and education level

Software used for quantitative data analysis: R Studio Version 3.2

Software used for qualitative data analysis: nVivo

Preliminary Quantitative Results

Table 2. Prevalence of DM found in the Tz'utujil and Kaqchikel areas of Guatemala

Category	n	Prevalence (%)	Mean A1c level (%)	Standard Deviation for hA1c level (%)
Total	391	19.2	5.9	1.8
Men	123	18.7	5.8	1.7
Women	268	19.4	5.9	1.8
Tz'utujil Area	120	14.0	5.8	1.8
Kaqchikel Area	271	21.5	5.9	1.7

Chart 1: Percentage of participants in common BMI ranges

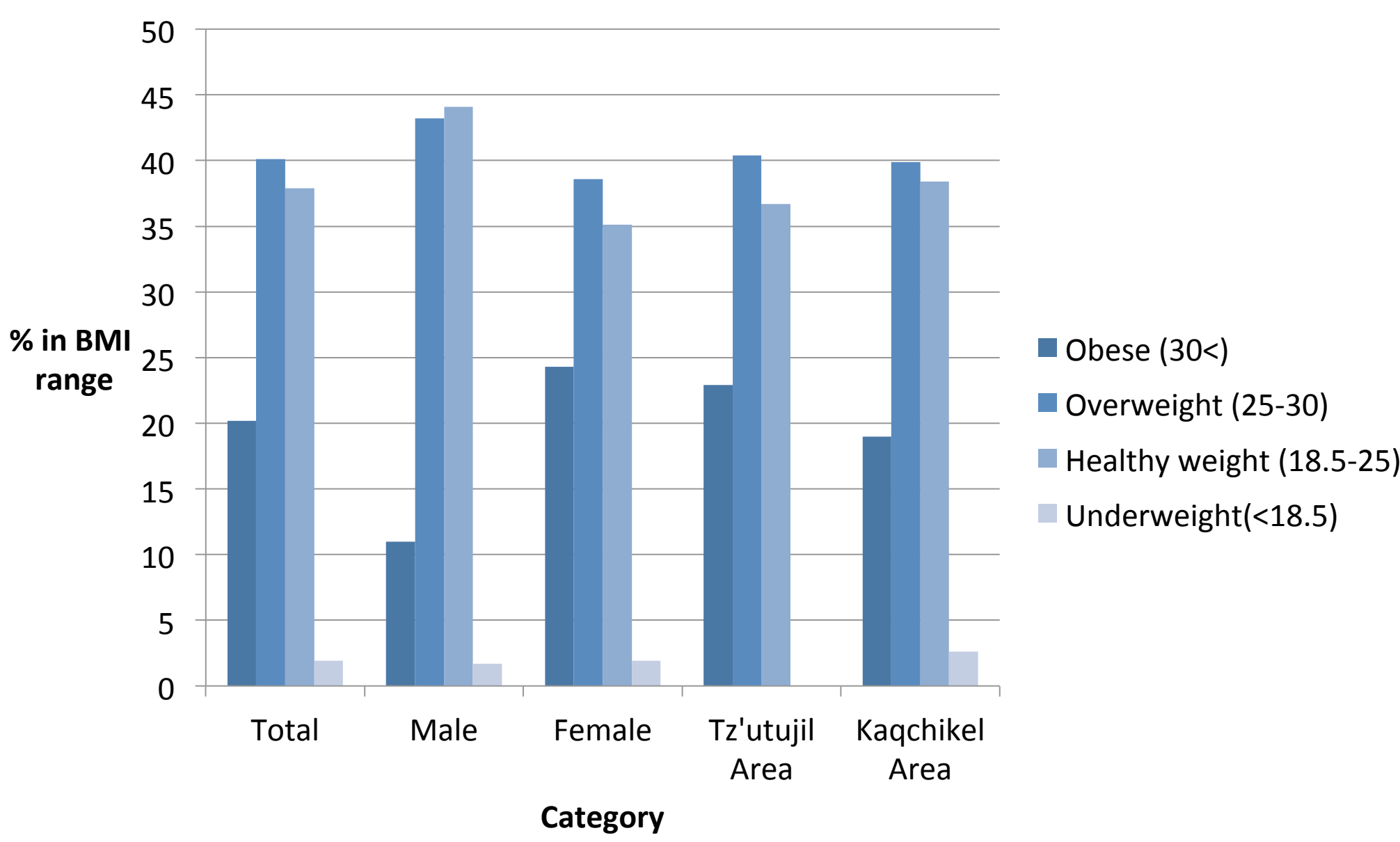


Table 2. Prevalence of obesity found in the Tz'utujil and Kaqchikel areas of Guatemala

Category	Prevalence (%)	mean BMI (kg/m ²)	Standard Deviation for BMI (kg/m ²)
Total	20.2	26.7	4.8
Men	11.0	25.6	4.1
Women	24.3	27.3	5.1
Tz'utujil Area	22.9	26.8	4.8
Kaqchikel Area	19.0	26.7	4.7

Initial findings – moving forward

While I have yet to complete a comprehensive analysis of my data, it is clear that the significantly higher prevalence of DM in the T'zutujil and Kaqchikel areas of Guatemala relative to other Latin American countries is a cause for concern. My preliminary results also indicate that more than half of adults are overweight or obese (58%).

Moving forward, I plan on conducting a more rigorous statistical analysis exploring the relationship between my risk factor variables and an indication of DM. I will also analyze my interview data in hope of shedding light on how Maya Kaqchikel and Tz'utujil make sense of DM.

Contact Information

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