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Mini Review Article

Diabetes in Indigenous Populations of the Americas: A Mini Review

Barcelo A*

Department of Public Health Science, University of Miami, USA

***Corresponding author:** Barcelo A, Department of Public Health Science, University of Miami, USA

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Abstract

Diabetes mellitus represents a growing public health challenge worldwide and disproportionately affects Indigenous populations in the Americas. Evidence indicates substantial heterogeneity in diabetes prevalence across regions, ethnic groups, and time periods. This mini review summarizes current knowledge on the epidemiology of diabetes among Indigenous populations, highlighting regional differences, methodological challenges, and contributing risk factors. Reported prevalence ranges widely, from negligible levels in some South American groups to extremely high rates in certain North American populations. These findings underscore the importance of population-specific approaches to diabetes prevention and management, rather than treating Indigenous populations as a homogeneous group.

Introduction

Diabetes mellitus, particularly type 2 diabetes, is a major contributor to global morbidity and mortality. In 2024, approximately 589 million people worldwide were living with diabetes, and this number is expected to increase significantly in the coming decades. In the Americas, the burden is similarly rising, with projections estimating an increase from 92 million cases in 2024 to 120 million by 2050 [1]. Indigenous populations of the Americas comprise diverse groups with distinct genetic, environmental, and cultural characteristics. Historically, these populations have experienced unique health transitions influenced by colonization, socioeconomic marginalization, and rapid lifestyle changes. Despite this diversity, epidemiological studies often group Indigenous peoples together, limiting the understanding of population-specific disease patterns. This mini review aims to summarize the prevalence and determinants of diabetes among Indigenous populations in the Americas, as reported in a recent publication in the Journal of Personalized Medicine, and to highlight the significant heterogeneity observed across studies [2].

Prevalence of Diabetes

The prevalence of diabetes among Indigenous populations varies markedly across regions and ethnic groups. A comprehensive scoping review identified 73 studies conducted between 1975 and 2025, encompassing over 44,000 individuals from 16 countries.

Reported prevalence ranges include:

a) North America: 1% to 70%

b) Central America: 5% to 14%

c) South America: 1% to 29%

Some of the highest prevalence rates have been documented among Native American populations in the United States, particularly the Pima Indians, where prevalence reached up to 70%. Similarly high rates have been reported in other North American Indigenous groups, including communities in Delaware, the Dakotas, and Canada. In contrast, several studies from Latin America reported very low or even zero prevalence of diabetes in certain populations, including Indigenous groups in Brazil, Chile, Colombia, Mexico, and Paraguay. These findings demonstrate a striking contrast and emphasize that diabetes risk is not uniformly distributed among Indigenous populations.

Determinants of Diabetes

The development of diabetes in Indigenous populations is influenced by a complex interplay of biological, environmental, and social factors.

Lifestyle and Environmental Changes: One of the most significant contributors to rising diabetes prevalence is the transition from traditional lifestyles to more Westernized patterns. This transition includes reduced physical activity and increased consumption of processed foods, both of which are strongly associated with the development of type 2 diabetes.

Genetic Susceptibility: Genetic predisposition plays an important role in certain populations. For example, the high prevalence of diabetes among the Pima Indians has been linked to genetic susceptibility interacting with environmental factors. However, genetic factors alone cannot explain the wide variability observed across populations.

Obesity as a Contributing Factor: Although obesity is a well-established risk factor for diabetes, its relationship with diabetes prevalence is not consistent across all Indigenous populations. Many studies show clustering of higher diabetes prevalence in populations with higher Body Mass Index (BMI). However, notable exceptions exist, such as the Aymara population in Chile, where low diabetes prevalence has been observed despite relatively high BMI levels. This suggests that additional factors, including metabolic and genetic differences, may influence disease risk.

Socioeconomic and Cultural Factors: Social determinants of health, including poverty, limited access to healthcare, and food insecurity, contribute significantly to diabetes risk. Historical and cultural factors, such as colonization and displacement, have also shaped current health outcomes in Indigenous communities.

Methodological Considerations

A major challenge in interpreting the epidemiology of diabetes in Indigenous populations is the heterogeneity in study methodologies. Variations exist in:

a) Diagnostic criteria (fasting blood glucose, OGTT, HbA1c)

b) Sampling methods (random vs. volunteer-based)

c) Definitions of Indigenous identity

For example, studies using volunteer-based sampling often report higher prevalence rates, likely due to selection bias. Additionally, changes in diagnostic criteria over time complicate comparisons across studies.

The lack of standardized methods limits the ability to generate pooled estimates and highlights the need for improved research consistency.

Discussion

The evidence clearly demonstrates that diabetes among Indigenous populations of the Americas is highly heterogeneous. This variability reflects differences in genetic background, environmental exposures, lifestyle patterns, and socioeconomic conditions. The markedly higher prevalence observed in North American populations compared to those in Central and South America suggests that factors such as urbanization and lifestyle changes play a significant role. At the same time, the presence of populations with low diabetes prevalence despite exposure to similar risk factors indicates that protective factors may exist and warrant further investigation. These findings support the concept of population-specific approaches to diabetes prevention and management. Uniform strategies are unlikely to be effective across diverse Indigenous populations. Instead, interventions should be tailored to the cultural, environmental, and biological contexts of each community.

Conclusion

Diabetes prevalence among Indigenous populations in the Americas varies widely, ranging from minimal to extremely high levels. This heterogeneity highlights the limitations of treating Indigenous populations as a single epidemiological group.

Future research should focus on:

a) Standardizing diagnostic and methodological approaches

b) Investigating population-specific risk and protective factors

c) Expanding recent epidemiological data

d) Developing culturally appropriate prevention and treatment strategies

Addressing these gaps is essential to reduce health disparities and improve outcomes among Indigenous populations.

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