

Introduction

- The increasing prevalence of diabetes is a concerning health issue in the United States (US)
- Despite the availability of prevention and treatment options, the Mid-Atlantic region is experiencing increased diabetes prevalence as well.
- In the US, the total estimated cost associated with diabetes is \$327 billion dollars. [1]
- Although the relationship between social determinants of health (SDoH) and disease outcomes has been the subject of research in recent years, more specific information on the actions to improve the precision of diabetes management interventions is needed.

Aims

- In previous studies that measured diabetes prevalence, nativity, race, ethnicity, and age were the common social determinants of health assessed. [2, 3]
- This study aims to quantify the association between SDoH and the prevalence of diabetes in the Mid-Atlantic area.

Study Design and Data Collection

- County-level data were collected from the US Census and clinical sources via PolicyMap.
- All counties were considered in the eight states of the Mid-Atlantic area which include: Maryland, Washington DC, Delaware, Virginia, West-Virginia, New York, New Jersey, Pennsylvania.
- The SDoH that were examined include age, race, gender, access to healthcare, nativity (foreign born), social vulnerability index (SVI), and median household income.

Principal Findings

- Multivariate analysis (multiple linear regression model with backward elimination) and Student’s t-test were conducted to explore the impact of SDoH (0.05 level of significance) on diabetes prevalence.
- White population in the county, percentage of adults' access to health care, and gender ratio (men to women) have a significantly negative impact on the diabetes prevalence rates.

Social Determinants of health	Estimates (95% CI)	p-value
Median Household Income	0.000 (0.000, 0.000)	< 0.001
Percentage of White Population	-0.050 (-0.063, -0.037)	<0.001
Percentage of Hispanic or Latino Population	-0.024 (-0.062, 0.013)	0.205
Social Vulnerability Level [Low]	-0.836 (-1.425, -0.247)	0.006
Social Vulnerability Level [Moderate]	-0.426 (-0.981, 0.129)	0.132
Social Vulnerability Level [Very Low]	-1.048 (-1.785, -0.311)	0.005
Percentage of Adults Reported to Have Personal Doctor or Healthcare Provider	-0.074 (-0.117, -0.031)	<0.01
Median Age of Population	0.273 (0.238, 0.307)	<0.001
Ratio of Men to Women	-0.017 (-0.031, -0.004)	0.011
Percentage of Foreign-Born Population	-0.03 (-0.072, 0.012)	0.166

Principal Findings

- The median age of the population has a significantly positive impact on the prevalence of diabetes.
- The prevalence rates of diabetes were significantly less in counties where the SVI is very low, and low compared to high.
- Two sample t-tests showed significant difference of prevalence in diabetes between low (12.53%) and very low (11.45%) counties [95% CI (0.52, 1.62)]; low and moderate (13.12%) counties [95% CI (0.96,2.38)]

Conclusion

- This study highlights the SDoHs that have significant impact on the prevalence of diabetes.
- The aim is to help policymakers make proper policy-based interventions where it is actionable. In the future, patient-level data may help us better understand the drivers of disparities in diabetes prevalence.

References

[1] American Diabetes Association. Economic Costs of Diabetes in the U.S. in 2017. *Diabetes Care*. 2018 May;41(5):917-928. doi: 10.2337/dci18-0007. Epub 2018 Mar 22. PMID: 29567642; PMCID: PMC5911784.

[2] Tsujimoto T, Kajio H, Sugiyama T. Obesity, diabetes, and length of time in the United States: Analysis of National Health and Nutrition Examination Survey 1999 to 2012. *Medicine*. 2016;95(35):e4578. doi:10.1097/MD.0000000000004578.

[3] Saelee R, Hora IA, Pavkov ME, et al. Diabetes Prevalence and Incidence Inequality Trends Among U.S. Adults, 2008–2021. *American Journal of Preventive Medicine*. Published online July 2023:S0749379723003100. doi:10.1016/j.amepre.2023.07.009

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