

Journal of Health Disparities Research and Practice

Volume 12, Issue 4

2018

Article 7

2019 STEP-UP SPECIAL ISSUE

Epigenetic Factors Impacting Type 2 Diabetes in American Indians

Alejandra Salazar Gonzalez*

Shelley Cole, Ph.D.†

*

†Texas Biomedical Research Institute

Copyright ©2018 by the authors. *Journal of Health Disparities Research and Practice* is produced by The Berkeley Electronic Press (bepress). <https://digitalscholarship.unlv.edu/jhdrp>

Epigenetic Factors Impacting Type 2 Diabetes in American Indians*

Alejandra Salazar Gonzalez and Shelley Cole, Ph.D.

Abstract

American Indians have been found to be at higher risk of type 2 diabetes (T2D) than any other ethnic or racial groups in the United States, with an estimated prevalence rate of 33%. Given that T2D prevalence rates amongst the American Indian population are so high, studying the complex factors that contribute to T2D is crucial. Of particular importance to this study is identifying heritable effects involved in development of T2D. Epigenetic effects, heritable changes to DNA that affect gene expression such as DNA methylation (DNAm), have been shown to be associated with T2D phenotypes.

Studies in other subpopulations have previously identified differential DNAm at the *ABCG1* gene as being associated with T2D. *ABCG1* plays a significant role in promoting cholesterol efflux, and it has been associated with T2D and related traits. As such, we sought to determine whether those results generalized to American Indians by assaying DNAm at *ABCG1* within a sample population of 285 American Indian participants in the Strong Heart Study (SHS). In verifying whether there is a significant association between DNAm levels and T2D, we hypothesize that individuals diagnosed with T2D will have higher rates of DNAm at loci in *ABCG1* than individuals who do not have T2D. Ultimately, we hope the results of this experiment can provide more insight on the role that differential DNAm has to play in the risk and development of T2D.

KEYWORDS: Type 2 diabetes; American Indians; Epigenetics; DNA methylation; ABCG1

*The STEP-UP HS program is supported by the National Institute of Diabetes and Digestive and Kidney Diseases of the National Institutes of Health Grant #: 2R25DK078382-12.



Journal of Health Disparities Research and Practice
Volume 12, STEP-UP Special Issue, Summer 2019, pp. 12
© 2011 Center for Health Disparities Research
School of Public Health
University of Nevada, Las Vegas

Epigenetic Factors Impacting Type 2 Diabetes in American Indians

Alejandra Salazar Gonzalez
Shelley Cole, Ph.D., Texas Biomedical Research Institute
Coordinating Center: Stanford University

ABSTRACT

American Indians have been found to be at higher risk of type 2 diabetes (T2D) than any other ethnic or racial groups in the United States, with an estimated prevalence rate of 33%. Given that T2D prevalence rates amongst the American Indian population are so high, studying the complex factors that contribute to T2D is crucial. Of particular importance to this study is identifying heritable effects involved in development of T2D. Epigenetic effects, heritable changes to DNA that affect gene expression such as DNA methylation (DNAm), have been shown to be associated with T2D phenotypes.

Studies in other subpopulations have previously identified differential DNAm at the *ABCG1* gene as being associated with T2D. *ABCG1* plays a significant role in promoting cholesterol efflux, and it has been associated with T2D and related traits. As such, we sought to determine whether those results generalized to American Indians by assaying DNAm at *ABCG1* within a sample population of 285 American Indian participants in the Strong Heart Study (SHS). In verifying whether there is a significant association between DNAm levels and T2D, we hypothesize that individuals diagnosed with T2D will have higher rates of DNAm at loci in *ABCG1* than individuals who do not have T2D. Ultimately, we hope the results of this experiment can provide more insight on the role that differential DNAm has to play in the risk and development of T2D.

Keywords: Type 2 diabetes, American Indians, Epigenetics, DNA methylation, *ABCG1*

ACKNOWLEDGEMENTS

The STEP-UP HS program is supported by the National Institute of Diabetes and Digestive and Kidney Diseases of the National Institutes of Health Grant #: 2R25DK078382-12