Case Study

International Journal of Endocrinology and Disorders

Open Access

An Epidemic Study of Risk Assessment of Diabetes in Group of Population

Guingona R, Dryden G, Carstensen T*, Young Y, Milovanovic B

Department of Medical Sciences, University of Nairobi, Kenya

*Corresponding Author: Goldenberg H, Department of Medical Sciences, Accra Technical University, Ghana.

Citation: Guingona R, Dryden G, Carstensen T*, Young Y, Milovanovic B, An Epidemic Study of Risk Assessment of Diabetes in Group of Population, J. International Journal of Endocrinology and Disorders, V1(3).

Abstract

Diabetes mellitus (DM) is a major public health problem globally as the prevalence and burden are uncontrolled in urban areas due to significant lifestyle choices. Globally, it was reported in 2016 that more than 422 million adults were living with diabetes and estimated to increase by 55% to over 591.9 million by 2035. Three-quarters of those with diabetes live in low- to middle-income countries (LMICs), and this is projected to increase with a median prevalence estimate at 5% in sub-Saharan Africa.

Keywords: Primary prevention; stratification; cardiovascular risk factors; asymptomatic patients

Introduction

Although patients with diabetes have 2 to 4 times increased risk of cardiovascular morbidity and mortality than individuals without diabetes, recent studies indicate that a significant part of patients are in a lower cardiovascular risk category. Men younger than 35 years, women younger than 45 years, patients with diabetes duration of less than 10 years without other risk factors have a much lower risk than patients who have traditional cardiovascular risk factors, and subclinical or established coronary artery disease (CAD). These patients are not risk equivalent as stated in previous studies. On the contrary, when in the presence of traditional risk factors or evidence of subclinical coronary disease (e.g., high coronary calcium score), the coronary risk is much increased and patients may be classified at a higher-risk category. Recent guidelines do not anymore consider diabetes as a CAD risk equivalent and recommend cardiovascular risk stratification for primary prevention. Stratification of diabetic patients improves accuracy in prediction of subclinical CAD, silent ischemia and future cardiovascular events. Stratification also discriminates higher from lower risk patients who may need intensive statin or aspirin prevention, while avoiding overtreatment in lower risk cases.

Cardiovascular risk in patients with diabetes

Diabetes has long been considered a "cardiovascular risk equivalent". This statement was formerly based in the Finnish study, in which T2DM patients without coronary heart disease (CHD) events showed a similar coronary mortality as non-diabetic patients who had a previous coronary event. Diabetes also increases coronary death rates conferring the patient a worst prognosis after having the first CHD event. These arguments led the 2001 NCEP-ATP III to recommend patients with diabetes to be treated as a separated high-risk category, with no need for stratification.

Case Study

Our (type 2) diabetes risk score is based on minimally-invasive self-report information that is weighted to reflect the relative importance of each piece of information. We modeled our risk score after the Finnish Diabetes Risk Score (FINRISK). Buijsse et al.'s recent review of diabetes risk scores indicated it was the most frequently used and validated score in independent cohorts. It has been tested in samples representative of working-aged populations (<65 years of age) as well as retired populations (>65 years of age). We evaluated the diabetes risk score as a continuous measure of disease risk. The risk score ranged from 0 to 19 from low to high risk, respectively. Within our diabetes risk score, blood glucose held the greatest weight followed by age, BMI, race, smoking status, and blood pressure.

Analysis: We used logistic regression to assess the ability of the continuous diabetes risk score to estimate diabetes onset at follow-up, which could occur as early as 3-years after their initial exam in study population 1 and one year later in study population 2. Because we were unable to split the dataset into a test and training set and use cross validation due to the small number of cases of diabetes in each sample, we used bootstrap resampling for modeling training and validation. Consequently, estimates may overestimate model performance when applied to an external dataset.

Discussion

Although many studies have already developed diabetes risk scores for the purpose of predicting disease onset, researchers have argued that in order to move this field forward and have value in diabetes prevention, the scores should undergo predictive validity testing. Our study addresses this suggestion by adapting a previously developed risk score and validating it in two heterogenous populations at multiple follow-up time points.

Conclusion

Diabetes risk scores can aid in the identification of sub-populations of individuals at risk for diabetes. They can be easily used in a variety of settings such as clinical care, workplace wellness programs, community health centers, among others.

References

1. Newman LS, Stinson KE, Metcalf D, Fang H, Brockbank CV, Jinnett K, et al. Implementation of a worksite wellness program targeting small businesses: The Pinnacol Assurance Health Risk Management Study. J Occup Environ Med. 2015;57(1): 14–21.
2. Vardhan A, Prabha MRA, Shashidhar MK, Shankar N, Gupta S, Tripathy A. Value of Indian Diabetes Risk Score among medical students and its correlation with fasting plasma glucose, blood pressure and lipid profile. J Clin Diagn Res. 2012;6:1528–30.
3. Wild S, Roglic G, Green A, Sicree R, King H. Global prevalence of diabetes, estimates for the year 2000 and projections for 2030. Diabetes Care. 2004; 27:1047–53.

International Journal of Endocrinology and Disorders
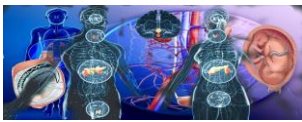
4. Kaiser Family Foundation. 2014 Employer Health Benefits Survey. Kaiser Family Foundation. 2014 Sep 10 [Cited 2020 March 9].

5. Bulugahapitiya U, Siyambalapitiya S, Sithole J, Idris I. Is diabetes a coronary risk equivalent? Systematic review and meta-analysis. Diabet Med. 2009;26(2):142–148.

6. Booth GL, Kapral MK, Fung K, Tu JV. Relation between age and cardiovascular disease in men and women with diabetes compared with non-diabetic people: a population-based retrospective cohort study. Lancet. 2006;368(9529):29–36.

Ready to submit your research? Choose Alcrut and benefit from:

➢ fast, convenient online submission
➢ rigorous peer review by experienced research in your field
➢ rapid publication on acceptance
➢ authors retain copyrights
➢ unique DOI for all articles
➢ immediate, unrestricted online access

At Alcrut, research is always in progress.

Learn more: https://alcrut.com/en/journals/international-journal-of-endocrinology-and-disorders

To submit your article Click Here: **Submit Manuscript**