Diabetes Risk Assessment: Clinical Screening Tools

J.M. Macedo [1,2], P. Baylina [2] , R. Fernandes [2] *

[1] USF Fiães, ACeS Entre Douro e Vouga I – Feira/Arouca, Stª Maria da Feira, Portugal

[2] School of Health, Polytechnic Institute of Porto, Porto, Portugal

Abstract

The epidemic of type 2 diabetes (T2D) continues to soar worldwide. Driven by changes in human habits, from availability of energy dense processed foods to the decrease of physical activity, T2D constitutes already a heavy burden of disease and a worrisome barrier for the sustainability of National Health Systems. Indeed, it affects 415 million people (8.8% prevalence), was responsible for 5.0 million deaths in 2015, and is estimated to cost 1/9 of all Health expenses (1).

Within Europe, Portugal is reported as having the highest prevalence of diabetes: an estimated 9.6% by World Standard Population (2). But if we take into consideration the age distribution of the Portuguese population, then estimates increase to 12.9%. This means that 1 million Portuguese have diabetes, with almost half of these still undiagnosed. Additionally, 2 million (a third of the adult population) are estimated to have intermediate hyperglycemia (or prediabetes), being largely unaware of this condition (3).

Since it was clearly shown that a life style modification program was able to prevent, over 3 years, more than half the expected new cases of diabetes (4), many clinical trials have provided evidence on the beneficial effect of interventions targeting individuals at high-risk and focused on nutrition and exercise (5). These in turn have supported the proposal of guidelines for diabetes prevention (6,7). Nonetheless, the main challenge remains to effectively translate these clinical trials and guidelines to widespread lifestyle interventions (7).

Portugal is in dear need of a strategy based on prevention for managing the diabetes crisis. That was recently highlighted in 'A Future for Health', a report commissioned by the Calouste

* Corresponding author, E-mail: ruben@ess.ipp.pt

Gulbenkian Foundation, where Diabetes Prevention was elected one of three main challenges to preserve SNS sustainability (8).

Regarding diabetes risk assessment, a large number of tools have been proposed to detect people at high- risk to develop diabetes and/or already within prediabetes (9-11). Several are based on questionnaires of parameters obtained noninvasively (12), and, among those, the Finnish T2D Risk Score (FINDRISC) has been validated and used as a screening tool for diabetes prevention programs (13-15). The FINDRISC 8 item questionnaire structure enables it to be applied in primary care, field screening initiatives, or even by individuals themselves. In Portugal, it has been used by us in the national diabetes prevalence study (PREVADIAB) (16). A supplemental strategy is to identify high-risk by screening existing Electronic Health Records (17).

In this work we propose to compare four risk assessment tools in their easiness of application and reliability, thus allowing stratification the risk of metabolic progression of the disease.

Keywords

Type 2 Diabetes mellitus; Prediabetes; Diabetes Risk Assessment; Diabetes risk score.

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