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# Importance of rational screening for type 2diabetes

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## Editorial

Studies in different populations have shown that identification of subjects at a high risk for Type 2 Diabetes (T2D) in the population may through lifestyle intervention by diet and exercise bring beneficial effects in terms of delay the onset of the metabolic abnormality. The "Da Qing IGT and Diabetes Study", showed that diet and/or exercise interventions led to a significant decrease in the incidence of diabetes over a 6year period among those with Impaired Glucose Tolerance.[1] The same Chinese group was able to see that the group-based lifestyle interventions can prevent or delay diabetes for up to 14years after the active intervention.[2] The "Finnish Diabetes Prevention Study was conducted to determine the feasibility and effects of a program of changes in lifestyle designed to prevent or delay the onset of type 2 diabetes in subjects with Impaired Glucose Tolerance. Their group also showed that it was possible to achieve primary prevention of type 2 diabetes by means of a non-pharmacologic intervention that can be implemented in a primary health care setting.[3]

In the extended follow-up of the "Finnish Diabetes Prevention Study", the group assessed the extent to which the originally achieved lifestyle changes and risk reduction remains after discontinuation of active counseling. Lifestyle intervention in people at high risk for type 2diabetes resulted in sustained lifestyle changes and a reduction in diabetes incidence, which remained after the individual counseling, was stopped.[4] In the United States, "The Diabetes Prevention Program Outcome Group", hypothesized that modifying factors with a lifestyle-intervention program or the administration of metformin would prevent or delay the development of diabetes. After an average follow-up of 2.8years lifestyle changes and treatment with metformin both reduced the incidence of diabetes in persons at high risk. The lifestyle intervention was more effective than Metformin.[5] The support of the importance of diabetes prevention lifestyle intervention or metformin significantly reduced diabetes development over 15years.[6]

Therefore identification of subjects at a high risk for T2D in the population is warranted, so that preventive action aimed at reducing their risk can be offered. The International Diabetes Federation states that diabetes is a serious health problem, and that most people with diabetes live in low- and middle-income countries and moreover, that these countries will experience the greatest increase in cases of diabetes over the next 22years.[7] Yet, little information is available regarding prevalence of diabetes and intermediate hyperglycemia in these countries. The purpose of The Brazilian Longitudinal Study of Adult Health is to provide a full accounting of prevalence of diabetes and intermediate hyperglycemia in a large, free-living Brazilian population, a cohort study of 15,105 civil servants aged 35-74years. Cut-offs followed the recommendations of the World Health Organization and the American Diabetes Association. With this full accounting, 19.7%(19.0%-20.3%) had diabetes mellitus, 50.4% being previously undiagnosed. Frequencies of intermediate hyperglycemia according to various criteria ranged from 16.1% to 52.6%. Diabetes or intermediate hyperglycemia was present in 79.1% of participants when using the most comprehensive definitions. The burden was greatest in the elderly, the obese, non-whites, and those with less formal education. That four of every five free-living individuals in six Brazilian state capitals presented either diabetes or intermediate hyperglycemia highlights the advanced stage of the obesity - diabetes epidemic in urban Brazil and indicates the need for urgent action.[8]

In such a picture it is of great importance to use rational and cost saving methods to identify and screen people at risk for abnormal glucose tolerance. The Finnish Diabetes Risk Score (FINDRISC) was originally developed to predict the 10years diabetes incidence in Finnish population (35 to 64years) in a cohort study. It is based on a simple questionnaire with 8 questions, including age (years), body mass index (BMI:kg/m$^2$), waist circumference (WC:cm), history of antihypertensive drug treatment, history of high blood glucose, family history of diabetes, daily consumption of fruits, berries, or vegetables (consume every day vs. not), and daily physical activity (having at least 30minutes of physical activity during work or at leisure time vs. not).[9] The questionnaire can be completed without any laboratory test. The answer of every question is assigned with different weighted scores according to the risk increase associated with the respective values in the regression model in the original cohort. The final score is the sum of the scores from 8 questions and ranges from 0 to 26.[10]

The performance of The Finnish Diabetes Risk Score as a screening tool for undetected type 2diabetes (T2D), abnormal glucose tolerance (AGT) and metabolic syndrome in the general population was assessed in a cross-sectional, population-based survey, a total of 4,622 subjects aged 45-74years. Full data with risk score estimate and glucose tolerance status were available for 2,966 subjects without a prior history of diabetes. The risk score was associated with the presence of previously undiagnosed T2D, AGT, metabolic syndrome and cardiovascular risk factors. The Finnish Diabetes Risk Score can be used as a self-administered test to screen subjects at high risk for T2D. It can also be used in the general population and clinical practice to identify undetected T2D, AGT and the metabolic syndrome.[10] The Finnish Diabetes Risk Score has been used in several studies in different populations and proved to be an effective method of screening. One example is the one done in U. S. adults in order to evaluate the performance of the FINDRISC in detecting undiagnosed diabetes and prediabetes among from the National Health and Nutrition Examination Survey (NHANES) 1999-2010. The authors conclude that it is a simple and non-invasive screening tool to identify individuals at high risk for diabetes in the U.S. adults.[11]

It has also been used in different parts of the world, as in a Colombian population,[12] in Iranian population,[13] in southern Spain,[14] in Greece[15] with good results. Public campaigns are very important to call the attention of the population about Type 2 Diabetes and especially for the early diagnosis of disease. With these objectives,

the Rio de Janeiro branch of the Brazilian Society of Endocrinology and Metabolism launched a campaign to mark the World Diabetes Day in some parts of the city using the FINDRISK questionnaire. To the participants with a high score a A1c Hemoglobin test was offered. Five hundred and thirty individuals responded to the questionnaire. Four hundred and fourteen showed high score and received a voucher for measurement of glycated hemoglobin. In the eighty-four individuals that attended the laboratory for the A1c Hemoglobin test there was a highly significant correlation ($p<0.0001$) with the results on the questionnaire. In conclusion, this model of campaign was able, through a simple and affordable tool, to detect a high prevalence of people at high risk of developing type 2diabetes, and the results of the score showed a highly significant correlation with glycated hemoglobin (unpublished data). Another great value of the questionnaire is that we can give a sheet with the questionnaire to the people who are interested to take it home and do it with their loved ones. It is our suggestion that it should be distributed largely, in an attempt to call attention about the risk factors for Type 2 Diabetes and stimulate people to seek advice for a more healthy life. Prevention is the only form to avoid the epidemic of Type 2 Diabetes.

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## Conflict of interest

Author declares that there is no conflict of interest.

## References

1. Pan XR, Li GW, Hu YH, et al. Effects of diet and exercise in preventing NIDDM in people with impaired glucose tolerance. The Da Qing IGT and Diabetes Study. *Diabetes Care.* 1997;20(4):537–544.
2. Li G, Zhang P, Wang J, et al. The long-term effect of lifestyle interventions to prevent diabetes in the China Da Qing Diabetes Prevention Study: a 20-year follow-up study. *Lancet.* 2008;371(9626):1783–1789.
3. Tuomilehto J, Lindström J, Eriksson JG, et al. Prevention of type 2 diabetes mellitus by changes in lifestyle among subjects with impaired glucose tolerance. *N Engl J Med.* 2001;344:1343–1350.
4. Lindström J, Ilanne-Parikka P, Peltonen M, et al. Sustained reduction in the incidence of type 2 diabetes by lifestyle intervention: follow-up of the Finnish Diabetes Prevention Study. *Lancet*. 2006;368(9548):1673–1679.
5. Knowler WC, Barrett-Connor E, Fowler SE, et al. Reduction in the incidence of type 2 diabetes with lifestyle intervention or metformin. *N Engl J Med.* 2002;346(6):393–403.
6. Diabetes Prevention Program Outcomes Study Group. Long-term effects of lifestyle intervention or metformin on diabetes development and microvascular complications over 15year follow-up: the Diabetes Prevention Program Outcomes Study. *Lancet Diabetes Endocrinol.* 2015;3(11):866–875.
7. Guariguata L. Global estimates of diabetes prevalence for 2013 and projections for 2035. *Diabetes Research and Clinical Practice*. 2016;103(2):137–149.
8. Schmidt MI, Hoffmann JF, de Fátima Sander Diniz M, et al. High prevalence of diabetes and intermediate hyperglycemia-The Brazilian Longitudinal Study of Adult Health (ELSA-Brasil). *Diabetology & Metabolic Syndrome* 2014;6:123.
9. Lindstrom J, Tuomilehto J. The diabetes risk score: a practical tool to predict type 2 diabetes risk. *Diabetes Care*. 2003;26(3):725–731.
10. Saaristo T, Peltonen M, Lindstrom J, et al. Cross-sectional evaluation of the Finnish Diabetes Risk Score: a tool to identify undetected type 2 diabetes, abnormal glucose tolerance and metabolic syndrome. *Diab Vasc Dis Res.* 2005;2(2):67–72.
11. Lu Zhang, Zhenzhen Zhang, Yurong Zhang, et al. Evaluation of Finnish Diabetes Risk Score in Screening Undiagnosed Diabetes and Prediabetes among U.S. Adults by Gender and Race: NHANES 1999-2010. *PLoS One*. 2014;9(5):e97865.
12. Gomez-Arbelaez D, Alvarado-Jurado L, Ayala-Castillo M, et al. Evaluation of the Finnish Diabetes Risk Score to predict type 2 diabetes mellitus in a Colombian population: A longitudinal observational study. *World J Diabetes.* 2015;6(17):1337–1344.
13. Janghorbani M, Adineh H, Amini M. Finnish Diabetes Risk Score to predict type 2 diabetes in the Isfahan diabetes prevention study. *Diabetes Res Clin Pract.* 2013;102(3):202–209.
14. Soriguer F, Valdés S, Tapia MJ, et al. Validation of the FINDRISC (FINnish Diabetes RIsk SCore) for prediction of the risk of type 2 diabetes in a population of southern Spain. Pizarra Study. *Med Clin (Barc).* 2012;138(9):371–376.
15. Makrilakis K, Liatis S, Grammatikou S, et al. Validation of the Finnish diabetes risk score (FINDRISC) questionnaire for screening for undiagnosed type 2 diabetes, dysglycaemia and the metabolic syndrome in Greece. *Diabetes Metab.* 2011;37(2):144–151.