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Short Communication

Users evaluate a detailed familial risk questionnaire as valuable and no more time consuming than a simple enquiry in a web-based diabetes risk assessment tool

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ARTICLE INFO

Introduction

A diabetes family history assessment can be used as a tool to select high-risk groups,[1] to personalize prevention messages[1] and may change preventive behaviour among high-risk populations.[2–4] To predict diabetes risk, family history information is often incorporated in diabetes risk assessments in addition to other risk factors, such as age and being overweight. To collect a family history, several methods can be used, ranging from detailed and standardized instruments using a pedigree to a simple dichotomous enquiry (presence or absence of disease in any relative). It has been shown that a self-reported detailed family history identifies more individuals at familial risk than a simple dichotomous enquiry.[4–6] Individuals arguably will be more triggered by a detailed assessment to reflect on affected relatives[5] and may even be more inclined to contact relatives to confirm their disease status. However, a detailed family history assessment can be time consuming, and individuals may be more inclined to complete a tool that is short.[7]

Although it has been shown that the great majority of people consider knowing their family's health history important to their personal health,[8] little is known about how individuals actually perceive the value of familial risk information and consequently receiving tailored feedback on their risk. As part of a randomized controlled trial[4] (PreDiCT study), aimed to determine the effect of tailored web-based diabetic familial risk information on risk-reducing behaviour, the present study addressed the following question: How do users (with or without a diabetes family history) of either a detailed diabetic familial risk assessment or a simple family history enquiry perceive the value and burden of a web-based diabetes risk assessment tool?

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Methods

Participants in the PreDiCT trial[4] (Trial NTR1938) were individuals with and without a family history of diabetes aged 35–65 years with a Body Mass Index (BMI, kg/m^2) $\geq$25, recruited from an independent certified research agency. Family history was defined as having $\geq$1 first degree relative with diabetes. Participants were not aware of being selected because of their familial risk and were randomly assigned to the simple or detailed condition. Differences between these two conditions are presented in Box 1. All participants were informed that the study was to determine the best way to advise people about their diabetes risk and thus blinded for study groups. During the trial diabetes risk was assessed with a web-based version of the validated Diabetes Risk Test,[9] including risk factors such as age, BMI, waist circumference, being physically active. Results were categorized in three risk strata (2 in 100, 10 in 100 and 20 in 100) that referred to their risk of getting diabetes within the next five years. Each participant received individual risk information based on the risk test, supported by risk-reducing preventive measures. Familial risk was assessed as part of the Diabetes Risk Test, by means of: 1) a simple enquiry in the simple condition; and 2) by means of a detailed family history questionnaire in the detailed condition. In this study all participants who completed the baseline, the directly post-test follow-up and three months follow-up questionnaires were selected. In total, 554 received the detailed condition and 555 received the simple condition. Participants were asked directly after they performed the assessment how they evaluated the Diabetes Risk Test and corresponding information, using 7-point semantic differential rating scales: useful, understandable, worrisome. The percentage of people who 'agreed' with the items was determined by a score of 5–7. The statements are shown in full length in Table 1. At three months, participants were asked in what way they agreed with two statements about the Diabetes Risk Test using a 5-point semantic differential rating scale: 1) I would recommend others to take the test; 2) completing the test takes a lot of time and effort. The percentage of people who 'agreed' with these items was determined by a score of four or five.

Potential group differences in the baseline characteristics of the study participants were assessed using chi-squared test for proportions and t-test for means. Logistic regression analyses were conducted to test for differences between users of each condition in perceived value and perceived burden.

Results

Of the 554 participants that received the detailed condition, 288 were people with and 266 were people without a family history of diabetes, and of the 555 participants that received the simple condition this was 286 and 269 respectively. There were no significant differences on the baseline characteristics sex, age, ethnicity (97% of native Dutch origin), education, BMI (33% obese [BMI $\geq$30]), and familial risk between individuals who received the detailed condition and those who received the simple condition.

Most participants perceived the detailed condition as useful, understandable and people would recommend it to others, see Table 1. Detailed familial risk assessment and feedback was associated with a lower perception that the information was worrisome than the simple enquiry (16.6% versus 22.2%, $P < 0.05$). No further differences were found between both conditions. Few participants perceived the burden of the test taking a lot of time and effort, even less so for the detailed condition, though not statistically significant. There were no differences in all findings between people with or without a family history, showing that this parameter was no effect modifier.

Discussion

The aim of this paper was to evaluate users' perceptions of a web-based diabetic risk assessment using a detailed family

Box 1
Differences in diabetes risk assessment and feedback information between the simple condition and the detailed condition.

	Simple condition	Detailed condition
Pre-assessment information	- Main risk factors (not including family history) - Effectiveness of preventive options	- Main risk factors, emphasising family history (e.g. explaining that familial risk increases with the number and kinship of affected relatives) - Effectiveness of preventive options
Family history assessment	*Simple enquiry*: Participants were asked 'Does diabetes occur within your family?' 1) no; 2) yes, with my grandfather, grandmother, uncle, aunt, nephew, niece; 3) yes, with my father, mother, brother, sister, or child.	*Detailed questionnaire*: First, participants had to indicate the number of children and siblings, and the number of both paternal or maternal aunts and uncles. Subsequently, they could indicate for each first-degree relative and second-degree relative and whether these relatives had been diagnosed with diabetes or whether they did not know this.
Feedback information	- Individual risk based on the risk test - Risk-reducing preventive measures	- Individual risk based on the risk test - Information about the total number of affected relatives - Risk-reducing preventive measures