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Perceived Risk and the Willingness to Enroll in a Diabetes Prevention Lifestyle Intervention in Arab Americans

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Abstract

The purpose was to examine whether self-reported perceived risk predicts willingness to enroll in DPP-adapted lifestyle intervention in Arab-Americans. Results document a positive relationship between perceived risk and willingness to engage in diabetes prevention activities. These findings imply that educational interventions communicating risk may improve adoption of diabetes preventative efforts.

Keywords

Risk Perception; Diabetes; Prevention; Lifestyle intervention; Arab Americans

Introduction

Diabetes and prediabetes are highly prevalent in Arab-Americans[1]. Landmark clinical trials including the Diabetes Prevention Program(DPP) have demonstrated the feasibility of diabetes prevention with lifestyle interventions[2–4]. The relationship between culture and health beliefs and behaviors is important because lifestyle interventions involve changing culturally-embedded behaviors. Perceived risk may impact the willingness to engage in preventive behaviors[5–6] and measuring perceived risk may identify individuals who are willing to enroll in diabetes prevention strategies. The purpose of this study was to examine whether self-reported perceived risk predicts the willingness to engage in a DPP-adapted, culturally-specific lifestyle intervention for diabetes prevention in Arab-Americans.

Materials & Methods

The study was approved by the Wayne State University and University of Michigan Institutional Review Boards. Self-identified Arab-Americans ≥30 years of age and with a body-

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Conflict of Interest
The authors declare that they have no conflict of interest.

mass-index (BMI) ≥27kg/m^2 were identified between 2007–2009 from a constructed sampling list and the general public in Dearborn, Michigan. After providing written informed consent, all identified participants completed verbally-administered standardized questionnaires assessing demographics, risk perception, and health-related quality of life followed by an orientation session that provided detailed information about a DPP-modeled, group-conducted, culturally-specific, 6-month lifestyle intervention. Their willingness to participate was assessed with standardized questions administered by bilingual interviewers. Those willing to participate were enrolled. Those unwilling to participate were considered to have declined study intervention.

Risk perception was measured with the validated Risk Perception Survey for Developing Diabetes (RPS-DD)[7]. The Comparative Disease and Environmental Risk subscales measure perceived risk across 15 diseases and 9 environmental risks on a 4-point scale with higher scores indicating greater perceived risk. The Optimistic Bias subscale evaluates perceived risk for developing diabetes on a scale of 1 (less bias) to 4 (more bias); a lower optimistic bias score corresponds to a higher perceived risk. The Personal Control subscale evaluates self-control over developing diabetes with a higher score indicating greater perception of control. The survey also assesses worry about developing diabetes and knowledge of diabetes risk factors. The composite risk score combines survey items from Comparative Disease and Environmental Risk, Optimistic Bias, Personal Control, and Worry subscales; a higher score indicates greater overall perceived risk related to diabetes and its complications. Health-related quality of life was measured with EQ-5D, a standardized instrument applicable to a wide range of health conditions and used to measure health outcome[8]. Analysis for all individuals who accepted or declined lifestyle intervention was performed.

Results

One-hundred-sixteen individuals were identified. Mean age was 47±11 years; 47% were men. Overall, the group perceived slight to moderate risk for developing the 15 diseases (including diabetes).

Fifty-three individuals agreed to participate and 63 declined participation (table 1). Demographic characteristics were comparable. Compared to individuals declining intervention, those willing to participate reported a significantly higher perceived risk for the 15 included diseases (1.85±0.66 vs. 1.57±0.45), the 9 environmental risks (2.23±0.73 vs. 1.97 ±0.61), and composite risk related to diabetes and its complications (1.96±0.48 vs. 1.77±0.30).

Within the Comparative Disease Risk subscale, we dichotomized the single-item, perceived risk for developing diabetes for the entire cohort of participants. Individuals answering 1 or 2 were classified as being at lower risk, and those answering 3 or 4 at higher risk. Compared to lower risk individuals, those at higher risk were more likely to have a family history of diabetes (88% vs. 50%; p=0.0002), to follow a diet (26% vs. 9%; p=0.030) and to report fair or poor health (40% vs. 19%; p=0.014) and worse health-related quality of life (62.1±14.9 vs. 68.1 ±14.3; p=0.047).

Discussion

Perceived risk, part of the individual's beliefs or "mental model" which in turn may be partly based on misconceptions and not necessarily scientific evidence, may be an integral factor in the adoption of preventative behaviors[5,6,9,10]. An individual's perceived risk with regard to a specific health condition, such as diabetes, is likely based upon a multitude of factors including individual health beliefs, past experiences, culture and interactions with health-care professionals. Data examining the personal risk perceptions related to diabetes among

physicians, pharmacists, patients with diabetes, women with histories of gestational diabetes, and primary care patients have been published[7,11–14]. There are no studies to date assessing perceived risk on the decision to participate in preventative behaviors in a relatively healthy population at-risk for diabetes. We examined associations between self-reported perceived risk and willingness to engage in diabetes prevention activities among Arab-Americans.

In our study, Arab-Americans exhibited slight to moderate risk perceptions on multiple dimensions of perceived risk. Our findings differed from those reported in primary-care patients. Individuals willing to participate in this study had higher perceived risk for multiple diseases and environmental conditions and an overall higher perceived risk for diabetes compared to those that declined participation. Such associations were not noted in the primary-care study. These conflicting observations may be partially explained by variations in study methodology. Unlike the primary-care study where perceived risk was assessed with the single-item perceived risk for diabetes question within the Comparative Disease Risk Subscale, we incorporated the entire RPS-DD and evaluated multiple dimensions of perceived risk.

A limitation to our study is the fact that only Arab-Americans were studied thus limiting the generalizability to other at-risk populations who merit diabetes prevention interventions. Additionally, other barriers and facilitators besides perceived risk may be potentially operative in the decision-making processes to engage in diabetes prevention activities.

In summary, the current study demonstrates that perceived risk is associated with willingness to engage in diabetes prevention activities. Future studies examining the effects of educational interventions on risk communication and other potential barriers and promoters to participation in diabetes prevention activities are needed.

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Table 1

Demographic Characteristics and Risk Perception Scores by Intervention

	Overall	Accepted Lifestyle	Declined Lifestyle	P-value
N	116	53	63	
Demographic Characteristic				
Age (years)	47.4±10.8	46.1±9.5	48.5±11.7	0.22
Males (%)	47.4	41.5	52.4	0.24
Completed High School (%)	62.5	60.0	64.5	0.62
Perceived Health (%)				0.44
Excellent or Very Good	18.3	22.6	14.5	
Good	56.5	50.9	61.3	
Fair or Poor	25.2	26.5	24.2	
Quality of Life	66.2±14.6	66.2±14.9	66.1±14.4	0.97
Weight Change (%)‡				0.66
Gained	42.1	37.7	45.9	
Lost	21.9	24.6	19.7	
Same	36.0	37.7	34.4	
Following Diet or Meal Plan (%)§	13.6	18.0	9.4	0.20
Current or Previous Smoker (%)	44.4	37.7	50.0	0.19
Family History of Diabetes (%)	61.1	69.8	53.3	0.07
Hypertension (%)	23.7	18.9	27.9	0.26
Hyperlipidemia (%)	45.2	43.4	46.8	0.72
Risk Perception Subscale Score				
Comparative Disease Risk	1.70±0.58	1.85±0.66	1.57±0.45	0.018
Comparative Environmental Risk	2.09±0.68	2.23±0.73	1.97±0.61	0.045
Optimistic Bias	2.42±0.59	2.46±0.63	2.39±0.55	0.50
Personal Control	2.96±0.34	2.98±0.39	2.95±0.30	0.59
Worry	2.77±0.42	2.84±0.40	2.71±0.43	0.09
Composite Risk Score	1.90±0.40	1.96±0.48	1.77±0.30	0.024
Knowledge	6.16±2.18	6.23±2.35	6.10±1.99	0.75

*Data are expressed as mean ± standard deviation or percentages.

†Analyses between individuals accepting and those declining study lifestyle intervention were performed using a two-sample t-test or a chi-square as appropriate. A two-tailed $p<0.05$ was considered significant.

‡Weight change over 12-month period

§Percent following a low calorie, low fat, low cholesterol, low salt, low carbohydrate or vegetarian diet.