

Genetic Risk for Primordial Prevention of Cardiometabolic Disease



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Background

Genome-wide association studies (GWAS) have identified >600 genetic variants robustly associated with type 2 diabetes (T2D) and obesity. Motivating parents to make positive behavior change is challenging. We hypothesized that genetic risk information could be useful in motivating parents to take action.

Methods

51 Parents with increased risk for T2D and their qualifying children participated. Families completed 3 interviews over 6 months. Children were genotyped and genetic risk was disclosed to parents, alongside a quasi-motivational interviewing intervention to help them select a health behavior to change. Parents were given the option to sign a commitment to change a given behavior for 3 months. Biological, psychological, and behavioral measurements were taken throughout.

Demographics

Table 1. Parents		n=51
Characteristic	Mean±SD or N(%)	
Age	35±6	
Female	31 (61%)	
Ethnicity		
Non-hispanic	43 (91%)	
Mexican or Mexican American	4(9%)	
Race		
White	34(67%)	
Black/African American	16(31%)	
Other	1(2%)	
GDM=gestational diabetes mellitus	12 (38% of mothers)	
Table 2. Children		n=44
Characteristic	Mean±SD or N(%)	
Age	4.8±2	
Female	23 (49%)	
BMI Mean	17 (±2)	
BMI/Age Percentile Mean	68.9 (±29)	
Risk Percentage	48 (±2.8)	

Results

Table 3. Disclosure Outcomes	
Parent State Tension	Increased (p=0.03)
Parent State Fatigue	Increased (p=0.003)
Parent State Anxiety	Increased (p=0.0017)
Parent Behavioral Change Confidence	Increased (p=0.0019)
% of Parents Who Signed Commitment	100%
Parent's Perception of their own weight	Perceived higher weight (p=0.05)

Table 4. Follow Up Outcomes	
Adult BMI	No Change
Child BMI Percentile	No Change
Parent Activity (mins)	Decrease (p=0.02)
Child Activity (mins)	No Change
Child Food Responsiveness	Decrease (p=0.0045)
Child Enjoyment of Food	Decrease (p=0.028)
Child Desire to Drink	Decrease (p=0.0016)

Summary

Disclosure of genetic risk produced significant acute psychological changes in parents, leading to a high rate of commitment in the short term. Longer term behavior change adherence was poor, and did not produce significant biological changes.

Conclusions

Genetic risk information appears capable of motivating parents, but the effect is short-lived. Poor adherence to change indicates the potential need for continued support and accountability. Our data indicate that there may be a role for genetic risk information to play in the larger goal of promoting healthy behaviors, but is insufficient on it's own.