

- The greater score indicating the greater risk for development of diabetes mellitus. This basic pedigree assessment suggests that there is a genetic basis for Type 2 diabetes mellitus.

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Genetic testing and type 2 diabetes mellitus:

- Phillipa, Hingorani, Cooper, Marmot, Brunner, Kumari, Kivimaki, and Humphries in 2010 completed a study began in 1985 and found there were several genetic SNPs associated with BMI, 2 hour glucose regulation as well as total cholesterol and LDL. The mean genetic count was 21.2 in those who developed diabetes and 20.5 in those who did not after 11.7 years.

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Literature Review: Knowledge and attitudes:

Morren, Rijken, Baanders, & Bensing in 2006 tested knowledge and attitudes of individuals with chronic disease. The response rate was 82% with perceived genetic knowledge low among the older and lower educated patients while attitudes was higher among younger more highly educated patients.. Overall higher levels of knowledge were associated with more favorable attitudes.

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Genetic testing and type 2 diabetes mellitus:

- Lysenko, Johnsson, Almgren Pulissi, Isomaa, Tuomi, Bergland, Altshuler, Nilsson, and Groop's study of 2021 people in 2008 found common variants in 11 genes were significantly associated with the risk of future type 2 diabetes showing more subjects who were diagnosed with diabetes (32%) than those without the diagnosis (22.1%) had a high genetic risk.

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- In 2007 Calsbeek, Morren, and Riijkin completed studied people with chronic disease. With regards to diabetes, Calsbeek et al found 74% had no knowledge regarding genetic testing for diabetes and 28% had less than favorable attitudes described as “frightening”. There was also worry about the repercussions involving the economic problems with obtaining insurance

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Methods

- A cross-sectional level II descriptive correlational design was used to explore the relationship of perceived knowledge and attitudes of certified diabetes educator and genetic testing.

- Data were collected at one point in time

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Methods

- A mailing list of 6,675 registered nurses who were also currently certified diabetes educators was obtained from the National Certification Board of Diabetes Educators.
- The entire list was entered into Random.org for randomization.

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The Demographics Questionnaire

- Gender
- Age
- Language
- Highest level of nursing education
- Years as CDE
- Time spend yearly in diabetes education

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Methods

- The first 2000 registered nurse certified diabetes educators were then mailed an informed consent, the demographic and background demographic sheet, the perceived knowledge of genetic testing scale, and the attitudes toward genetic testing tool.

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Characteristics of the sample

Gender			
Male	13	4.10%	
Female	307	95.90%	
Age			
18-29	1	0.30%	
30-39	18	5.60%	
40-49	48	15%	
50-59	163	50.90%	
60+	90	28.10%	
Language			
English	320	100%	

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Results

- Of the 2000 surveys mailed, 546 were returned. 320 met inclusion criteria, making the response rate 16%.
- No surveys were discarded for missing data

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Characteristics of the sample

Highest Nursing Educational Degree			
Diploma	5	1.60%	
Associate Degree	41	12.80%	
Bachelor Degree	142	44.40%	
Master Degree	122	38.10%	
Doctoral Degree	10	3.10%	
Years as a Certified Diabetes Educator			
1 to 5 years	49	15.30%	
6 to 10 years	89	27.5%	
11-15 years	67	20.90%	
16-20 years	46	14.40%	
21-25 years	43	13.40%	
26-30 years	26	8.10%	
Over 30 years	8	2.50%	
Time Spent in Diabetes Education			
More than 25% up to 50%	76	23.80%	
More than 50% up to 75%	100	31.30%	
More than 75% up to 100%	144	45%	

Characteristics

Previous genetic training		
Yes	50	15.60%
No	269	84.10%
Previous genetic testing		
No	319	99.70%

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Attitudes Toward Genetic Testing Instrument

- Mean score for favorable attitudes subscale was 21.7 (range 6-30)
 - Cronbach's alpha was .89 for the favorable attitudes subscale
- Mean score was 18.8 for reserved attitudes subscale (range 7-35).
 - Cronbach's alpha was .53 for the reserved attitudes subscale.

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The Perceived Knowledge of Genetic Testing Scale.

- Mean score was 10.3 on an 21 point scale
- Subscales
 - Medical possibilities score Cronbach alpha .63
 - Social consequences Cronbach's alpha .66

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Results

Favorable Attitudes						N	Strongly Disagree	Disagree	Don't know/no opinion	Agree	Strongly Agree
	I think the development of DNA research is hopeful in the treatment of diseases.					308	6	7	18	169	108
	I think that the development of DNA research is a positive medical progress					308	5	4	18	176	105
	I approve of using DNA-testing for early detection of diseases					308	5	3	42	175	83
	I would inform my siblings about the results of a DNA-test for a specific disease.					308	4	3	22	150	129
	I would inform my children about the results of DNA-testing for a specific disease					308	4	2	32	133	137
	I want to know whether my disease is hereditary					308	3	4	21	147	133

Results: Knowledge

						Sufficient	Little	None
Medical Possibilities								
	The possibility to use genetic testing to prevent or treat a disorder					40.6	55.5	4.1
	The significance of DNA-testing for my relatives					22.2	64.4	13.1
	The significance of DNA-testing for my offspring					25	61.9	12.5
	The possibility to use genetic testing to prevent or treat a disorder					31.3	63.1	5.6
	The possibility and risks of gene therapy					15	69.4	15
Social Consequences								
	Your rights to refuse DNA-testing					32.8	43.4	23.8
	The consequences of DNA-testing for my daily life					15.6	55.3	29.1
	The consequences of DNA-testing for my work					16.3	60.3	23.4
	The consequences of DNA-testing for taking out insurance					17.2	51.9	30
	Your own possibilities to apply for DNA-testing					15.9	48.8	35
	The rights of third parties to inquire about the results of DNA-testing					8.1	43.4	48.4

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Reserved Attitudes

Reserved Attitudes						N	Strongly Disagree	Disagree	Don't know/no opinion	Agree	Strongly Agree
	The possibility of a DNA-test will change one's future					308	1	8	73	162	64
	I worry about the consequences of DNA-testing for being able to take out insurance					308	1	21	81	127	77
	As long as a disease cannot be treated, I don't want a DNA-test					308	29	106	104	52	17
	If I had a DNA-test done, my family need not know about the result					308	28	111	87	71	11
	I worry about the consequences of DNA-testing for the chances of finding a job					308	17	89	107	73	22
	I don't want a DNA-test to tell me that I am at risk for a certain disease					308	50	172	59	24	3
	The idea of a DNA - test frightens me					308	60	157	50	35	6

Conclusions

- Significance of 0.0 found in an inverse relationship between the medical possibilities of perceived knowledge and reserved attitudes indicating that lesser perceived knowledge increased reservation.
- Positive relationships were found between variables of “the possibility of genetic testing will change one’s future and “the possibility of use genetics testing to prevent or treat a disorder as well as “the possibility of early detection using DNA testing. Positive relationships indicated that the higher the perceived knowledge then the more they agreed with these items on the reserved attitude scale.

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With new gene-editing techniques, we can transform life, but should we?

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Conclusions

- And finally, positive significance was found with the entire medical subscale perceive knowledge statements and the favorable attitudes except the statement, “I would inform my sibling about the results of a DNA specific disease. The more perceived knowledge they reported the more they agreed with the medical statements.

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- Questions??

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- <https://www.nih.gov/news-events/news-releases/genetics-type-2-diabetes-revealed-unprecedented-detail>

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