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# Assessing Patient-Provider Collaboration in Subjects with Type 2 Diabetes in Jamaica and Effects on Glycemic Control

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## **Comments**

Medical student Paul Daniel participated in this study as part of the Senior Scholars research program at the University of Massachusetts Medical School.

# Assessing Patient-Provider Collaboration in Type 2 Diabetics (in Jamaica) and Effects on Glycemic Control

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## BACKGROUND AND PURPOSE

### BACKGROUND

- Type 2 diabetes mellitus is a growing health problem worldwide.
- Primary pathophysiology of this disease stems from impaired glucose uptake via insulin resistance that results in symptomatology ranging from polydipsia and polyphagia to potentially life threatening hyperglycemic episodes.
- Major effects on health and healthcare costs are from microvascular complications of diabetic nephropathy, neuropathy and retinopathy, which can lead to end-stage renal disease, extremity amputation, and blindness, respectively.
- Timely screening and outpatient referrals, as well as good glycemic control, have been shown to slow the progression of complications.
- Recent trend in the United States for management of chronic conditions (such as type 2 diabetes) focuses on patient-centeredness which advocates for increased collaboration between caregivers such as nurses and physicians with patients to produce a management plan that is feasible for the patient.
- In Jamaica, the incidence of type 2 diabetes has been steadily increasing since 1960, with current estimates of a diabetic population exceeding 300,000. Some research suggests poor glycemic control in sample populations and high rates of complications such as retinopathy.
- As a counter measure, organizations such as the Diabetes Association of Jamaica have implemented educational workshops to make the general population more aware of this disease and its complications.
- Beyond the education of the public and management by physicians, it would be interesting to assess the perception of patient-centeredness in Jamaicans suffering from type 2 diabetes and determine if there any implications for management of their condition.

### PURPOSE

- To compare Patient Assessment of Care of Chronic Conditions (PACIC) scores to hemoglobin A1c values in subjects with type 2 diabetes and to determine the correlation between patient-physician collaboration and glycemic control.

## METHODS

### STUDY DESIGN AND RECRUITMENT

- A cross-sectional observation study measuring patient-to-provider collaboration in type 2 diabetics in a sample population in Jamaica.
- Patients recruited from the diabetes clinic at the University of the West Indies hospital in Mona, Jamaica on August 15, 2011 and August 22, 2011.
- 40 subjects were screened and 19 were ultimately enrolled after meeting the following inclusion criteria:
  - Males or females 18 years old and above diagnosed with type 2 diabetes as confirmed by laboratory testing by either one of the following: a fasting plasma glucose > 126 mg/dL (7 mmol/L) (no caloric intake for > 8 hours) with symptoms (polyuria, polydipsia, weight loss) or with random plasma glucose > 200 mg/dL (11.1 mmol/L), or a HbA1c  $\geq$  6.5%
  - Ability to provide written informed consent
  - Ability to complete PACIC questionnaire (subjects had to be able to read and comprehend English)
- Subjects were excluded based on the following criteria:
  - Males and females without a documented history of type 2 diabetes (as described in inclusion criteria)
  - Pregnant women
  - Patients without hemoglobin A1c testing within 3 months of participation

### VARIABLES

- The Patient Assessment of Care of Chronic Conditions (PACIC) questionnaire was our measure of patient-to-physician collaboration. The PACIC is a validated instrument that was used to assess the level of collaboration patients with chronic disease feel they have with their healthcare providers.
- The PACIC measures five subjective categories: 1) Patient activation; 2) Delivery system design and decision support; 3) Goal setting; 4) Problem solving/contextual counseling; and 5) Follow-up/coordination. The overall PACIC score measures patient-to-physician collaboration with a range from a low of 1.0 to a high of 5.0.
- Hemoglobin A1c (HbA1c%), which measures the amount of glycosolated hemoglobin (as a percentage) for the past 3 months, was our measure of glycemic control.
- Additional study data for both characterization of the study population and analysis of potential confounders were: age, sex, years diagnosed with diabetes, and current diabetic therapy (i.e., no therapy, lifestyle modification, insulin alone, oral hypoglycemic agents or a combination of insulin/oral hypoglycemic agents).

### STUDY PROCEDURES

- Subjects were consented, assigned a study number, and self-administered the PACIC in a private exam room.
- The investigator (PD) collected additional study data as described above.

## RESULTS

### STUDY POPULATION AND DATA

- Study population was predominantly female (78.9%; 15 women/4 men), had an age range of 33-78 years (mean 55), years diagnosed with diabetes 0.03 – 32 years (mean 14), Hemoglobin A1c values from 5.40% – 15.5% (mean 10.8%), and with a majority (42.1%; 8 participants) receiving a combination of insulin and an oral hypoglycemic agent as a treatment modality. (See Figure 1)

(Figure 1) STUDY POPULATION & VARIABLES

		Total (n)	Percent (%)
Gender	Male	4	21.1
	Female	15	78.9
Current Therapy:	No therapy	0	0
	Lifestyle Modification	0	0
	Insulin	7	36.8
	Oral hypoglycemic agent	4	21.1
	Insulin + Oral hypoglycemic	8	42.1
		Range	Mean
Years since diagnosis		0.03-32	14
Subject age		33-78	55
HbA1c values		5.4-15.5	10.8
PACIC scores		1.85-4.80	3.15

### DATA ANALYSIS

- Overall, PACIC scores ranged from 1.85 – 4.80 (mean 3.15).
  - Main variables of PACIC scores and HbA1c were subject to analysis via the Pearson correlation, but no statistically significant correlation was found ( $r=0.184$ ).
  - Additionally, HbA1c did not correlate significantly with the other variables of patient age (-.408), and years diagnosed with diabetes (-.244).
- These data were also re-computed using non-parametric correlation coefficients to take small sample sizes into account. However, no statistically significant correlations were found.
- Likely the study is underpowered to find statistically significant correlations between PACIC scores and other key study variables. (See Figure 2 below)

(Figure 2) CORRELATIONS

		HbA1c Value	PACIC Score	Years Since Diagnosis
HbA1c Value	Pearson Correlation	1.0	0.184	-0.244
	Sig (2-tailed)		0.465	0.314
N		19.0	18	19
PACIC Score	Pearson Correlation	0.184	1	0.046
	Sig (2-tailed)	0.465		0.856
N		18.0	18	18
Years Since Diagnosis	Pearson Correlation	-0.244	0.046	1
	Sig (2-tailed)	0.314	0.856	
N		19.0	18	19
Patient Age	Pearson Correlation	-0.408	-0.048	0.257
	Sig (2-tailed)	0.083	0.849	0.288
N		19.0	18	19

## CONCLUSIONS

- Implementation, data collection and administration of the questionnaire was straightforward and did not interfere or prolong patient appointments. Thus, testing patient-to-provider collaboration could potentially be a component of visits for patients with chronic illness. However, further studies are needed to evaluate efficiency and cost-effectiveness.
- Recruitment was suboptimal with the limiting factor being that most subjects could not afford Hemoglobin a1c testing as part of their diabetic management.
- No statistically significant associations between our main variables of patient and provider collaboration (PACIC score) and glycemic control (HbA1c) were found. Analysis of potential confounders also failed to illicit any correlations.
- The major limitation in our study stems from our small sample size. An important next step would be to repeat this study with a larger sample and currently, the process of gathering additional subjects is underway.
- In summary, it is unclear what impact patient-to-physician collaboration will have on glycemic control in type 2 diabetics. However, if results are favorable, as suggested by past research, and demonstrate a clinical benefit, the PACIC could potentially be an additional tool for physicians treating type 2 diabetes in controlling this disease and limiting complications.

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