



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

Paul E. Daniel Jr. MSIV, Michael Godkin PhD, Judith Savageau MPH University of Massachusetts Medical School, Worcester MA

Rosemarie Wright–Pascoe MBBS, DM, Michael Lee MBBS, DM University of the West Indies, Faculty of Medicine, Mona Jamaica



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 symptomology ranging from polydypsia 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 been 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 ($r=.184$).
- 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 Sig (2-tailed) N	1.0	0.184	-0.244
			0.465	0.314
		19.0	18	19
PACIC Score	Pearson Correlation Sig (2-tailed) N	0.184	1	0.046
		0.465		0.856
		18.0	18	18
Years Since Diagnosis	Pearson Correlation Sig (2-tailed) N	-0.244	0.046	1
		0.314	0.856	
		19.0	18	19
Patient Age	Pearson Correlation Sig (2-tailed) N	-0.408	-0.048	0.257
		0.083	0.849	0.288
		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.

ACKNOWLEDGEMENTS

University of Massachusetts Medical School Office of Undergraduate Medical Education

My mentors on this Senior Scholars project: Dr. Michael Godkin and Judith Savageau from the University of Massachusetts Medical School's Department of Family Medicine and Community Health

Dr. Rosemarie Wright-Pascoe and Professor Michael Lee of the University of the West Indies Faculty of Medicine.

REFERENCES

- Ferguson TS, Tulloch-Reid MK, Wilks RJ. The epidemiology of diabetes mellitus in Jamaica and the Caribbean: A historical review. West Indian Medical Journal. 2010 Jun;59(3):259-264.
- Moriarty BJ, Dunn DT, Moriarty AP. Diabetic maculopathy in a Jamaican population. International Ophthalmology. 1989 Sep;13(5):301-303.
- Soyibo AK, Barton EN. Chronic renal failure from the English-speaking Caribbean. West Indian Medical Journal. 2009 Dec;58(6):596-600.
- Ozelik F, Yiginer O, Arslan E, Serdar MA, Uz O, Kardesoglu E, Kurt I. Association between glycemic control and the level of knowledge and disease awareness in type 2 diabetic patients. Polish Archives of Internal Medicine. 2010 Oct;120(10):399-406.
- Wright-Pascoe R, Roye-Green K, Bodonaik N. The medical management of diabetes mellitus with particular reference to the lower extremity: The Jamaican experience. West Indian Medical Journal. 2001 Mar 1-4;50 Suppl 1:46-49.
- Standards of Medical Care in Diabetes – 2011. American Diabetes Association.
- Nam S, Chesla C, Stotts NA, Kroon L, Janson SL. Barriers to diabetes management: Patient and provider factors. Diabetes Research Clinical Practice. 2011 Mar 5.
- Glasgow RE, Wagner EH, Schaefer J, Mahoney LD, Reid RJ, Greene SM. Development and Validation of the Patient Assessment of Chronic Illness Care (PACIC). Medical Care. 2005;43(5):436-444.
- Williams GC, Freedman ZR, Deci EL. Supporting autonomy to motivate patients with diabetes for glucose control. Diabetes Care. 1998;21:1644-51.
- Holmstron I, Roing M. The relationship between patient-centeredness and patient empowerment: A discussion on concepts. Patient Education and Counseling. 2010;79:167-172.
- Moran, J, Bekker, H, Latchford G. Everyday use of patient-centered, motivational techniques in routine consultations between doctors and patients with diabetes. Patient Education and Counseling. 2008;73:224-231.
- Saha, S, Beach MC, Cooper LA. Patient centeredness, cultural competence and healthcare quality. Journal of the National Medical Association. 2008 November;100(11):1275–1285.

