IMPACT: Diabetes: Description of Diabetes Team Interventions and Outcomes Among Various Ethnic Groups

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BACKGROUND INFORMATION

- The ADA Standards of Medical Care recommend that an interdisciplinary health care team be used to develop an individualized treatment plan for patients with diabetes.[1,2]
- Multiple programs, including the *Diabetes Ten City Challenge* and the *Asheville project*, have successfully demonstrated the clinical benefits of pharmacist-led services in a diabetes population. [3,4]
- Health disparities often exist between ethnic groups within a diabetic population, particularly African American and Hispanic patients, who often have greater difficulty accessing adequate health care resources and controlling their chronic diseases. [5,6]
- In addition, language barriers complicate this problem and make educational interventions in non-English speaking populations difficult to implement .[5,6]
- Current literature lacks information describing the detailed diabetes care model and team interventions made in the free- clinic setting.
- **The IMPACT: Diabetes Program** implemented a pharmacist-integrated, diabetes team care model in this unique setting which led to positive clinical outcomes.[7]
- This analysis seeks to compare outcomes across different ethnic and English-proficiency groups.

OBJECTIVES

1. Identify and describe the types of interventions being made by the pharmacist as a part of the **Impact: Diabetes Program** Interprofessional diabetes care team.

1. Compare the type of patient care interventions made and the clinical outcome measures observed among the varied ethnic and English-proficiency groups represented.

METHODS

Model of Care:

1. A diabetes management collaborative practice integrating the pharmacist was established across four free-clinic locations.
2. Patients were enrolled in July of 2011 and followed through January of 2013.
3. Pharmacists conducted patient appointments in coordination with other members of the interprofessional team, including *interpreters, social workers, nurses, primary care physicians, specialists, and clinic staff.*
4. Patient demographic data and key diabetes clinical markers, such as hemoglobin A1c, LDL cholesterol and blood pressure, were measured at baseline and at follow-up visits and appointment specific interpreter use, pharmacist interventions, and referrals were documented.
5. Team-based education and access interventions were emphasized at each visit and individualized to specific patient needs, and commonly included education regarding diabetes self-management and goals, medications, adherence, as well as assistance obtaining medications and diabetes supplies.
6. Interpreters were used when needed in order to account for any pre-existing language barriers.

Data Collection and Analysis:

1. Patient outcomes and intervention data were retrospectively collected using a standardized database and stratified based on varying ethnic and English-proficiency groups.
2. P-values were calculated from two separate one-way ANOVAs.

RESULTS

Table 1: Demographic Information, n=82

Ethnicity	n (%)
African- American	29 (35%)
Caucasian	28 (34%)
Hispanic/ Other	25 (30%)
Primary Language	**n (%)**
English	57 (70%)
Other	25 (30%)

Table 2: Visit Information

	Caucasian	African-American	Hispanic/Other	p- value
Number of visits	5.3 (5.2)	5.8 (4.3)	4.6 (2.4)	0.1477
Length of participation (months)	9.2 (8.3)	9.4 (4.8)	8.1 (5.9)	0.7594
	English		**Other**	**p value**
Number of visits	6.1 (4.7)		4.4 (2.5)	0.0888
Length of participation (months)	9.4 (6.6)		7.8 (6.2)	0.3117

Figure 1. Number of interventions versus primary language

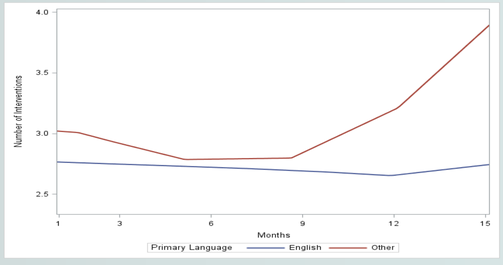


Table 3: Visit Interventions (%)

	African-American	Caucasian	Other	p-value	English	Non-English	p-value
Medication increased	31.7	41.9	33.6	0.3016	37.6	30.8	0.2215
Medication added	22.1	22.8	31.1	0.1908	22.4	31.2	0.0550
Medication discontinued	12.1	8.9	13.2	0.5300	10.9	12.8	0.5561
Medication access resolution	67.1	57.3	63.6	0.3404	63.2	64.2	0.8534
Education	98.5	90.3	95.6	0.1063	95.0	95.4	0.8839
Referrals	21.6	23.1	21.6	0.9376	22.7	20.6	0.6523

RESULTS

Figure 2 and Figure 3 depict the change in A1c, the primary clinical marker for diabetes, over the study period for various ethnic and primary language groups.

Figure 2. A1c over time versus *ethnicity*

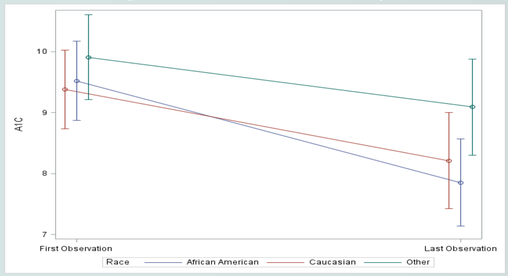


Figure 3. A1c over time versus *primary language*

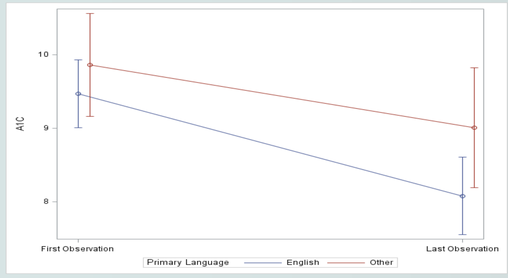


Figure 4 and Figure 5 depict the change in HDL and LDL , clinical markers of concurrent chronic disease state management, over the study period for various ethnic groups.

Figure 4. *HDL* over time versus ethnicity

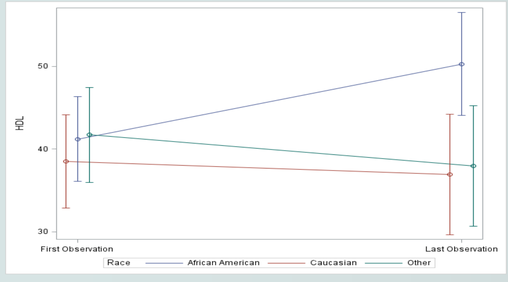
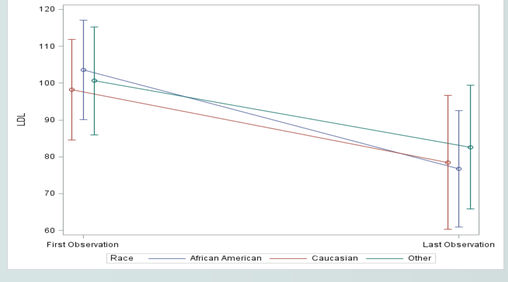


Figure 5. *LDL* over time versus ethnicity



DISCUSSION

- The number of interventions in non-English speaking patients was slightly greater, but the method by which these patients were managed during the program remained consistent across all languages.
- There were no significant differences in study outcomes (A1c, LDL, HDL, etc.) between the two language groups.
- In addition, there were no significant differences in intervention types made during visits with patients of varying ethnicities.
- Medication access, diabetes education and medication changes were the most common interventions made equally across all ethnicities.
- The only statistically significant difference in study outcomes was HDL improvement in African Americans, which may have been due to differences in variables such as smoking cessation and exercise, which were not evaluated in this study.
- Study limitations include relatively small sample sizes of some ethnic groups, the lack of a control group, as well as the need for further description of the types of access and interventions made by the pharmacist during patient care visits.

CONCLUSIONS

- Incorporation of a pharmacist's medication expertise into the clinic's diabetes practice model allowed for a more comprehensive patient care approach.
- In this study, team-based care overcame disparities in diabetes care, most likely due to the team utilizing interpreters and culturally appropriate education as well as the extensive access and educational interventions made in this diverse population.
- Our ability to provide the same interventions across all ethnic groups in a population that is typically more difficult to control, allowed us to consistently improve diabetes management.
- Using an interprofessional team approach, specifically including an interpreter, language-appropriate education, and a longer visit length allowed for the program to have a greater impact in diabetic patients with language barriers.
- Safety-net clinics providing care to patients with diabetes should consider implementing a pharmacist-integrated diabetes care program to improve outcomes.
- Additional studies should be conducted to determine how to further reduce health disparities in an ethnically diverse diabetes population.

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