The Hispanic Diabetes Management Program: Impact of community pharmacists on clinical outcomes

Ola O. Oyetayo, Clyde James, Anita Martinez, Kim Roberson, and Robert L. Talbert

Abstract

Objective: To assess the impact of community pharmacists on clinical outcomes in Hispanic patients with type 2 diabetes.

Methods: 126 patients were enrolled in this longitudinal pre/post cohort study that took place in nine community and four workplace pharmacies in San Antonio, TX. Pharmacists provided education, point-of-care testing for glycemic and metabolic parameters, clinical assessment, goal setting, and drug therapy management with physicians. Study outcomes were changes in glycosylated hemoglobin (A1C) and accompanying metabolic parameters (blood pressure, lipid parameters, and body mass index) during a 1-year time frame.

Results: In the overall cohort, A1C was not reduced significantly from baseline to 12 months (7.8% vs. 7.6%, $P = 0.516$). However, statistically significant reductions occurred for fasting plasma glucose, triglycerides, and diastolic blood pressure. None of the other parameters was affected significantly. In the subgroup of patients not at target values at baseline, significant reductions occurred for A1C (9.2% vs. 8.6%, $P = 0.001$), systolic blood pressure (147 vs. 143 mm Hg, $P = 0.031$), diastolic blood pressure (91 vs. 87 mm Hg, $P < 0.001$), triglycerides (259 vs. 219 mg/dL, $P < 0.001$), LDL cholesterol (139 vs. 123 mg/dL, $P < 0.001$), and total cholesterol (237 vs. 222 mg/dL, $P = 0.008$).

Conclusion: Interventions performed by community pharmacists are effective in improving clinical outcomes in a Hispanic cohort with diabetes. Pharmacists' efforts were most successful in patients not at target glycemic and metabolic levels.

Keywords: Diabetes, Hispanic patients, health outcomes, medication therapy management, community pharmacists.

J Am Pharm Assoc. 2011;51:623–626.
doi: 10.1331/JAPhA.2011.09229

Diabetes is a growing epidemic among the Hispanic community in the United States. The Centers for Disease Control and Prevention (CDC) estimated that in 2007, about 2.2 million Hispanic Americans were living with diabetes.[1] This represented an increase of 26% from 2004 to 2007. Mainous et al.[2] further projected that by 2031, 20% of the adult Hispanic population in the United States will have diabetes.

The National Health and Nutrition Examination Survey (conducted from 1999 to 2006) showed that rates of glycemic control were significantly lower in Hispanics compared with non-Hispanic whites.[3] Pooled 8-year glycemic control, which was defined as glycosylated hemoglobin (A1C) less than 7%, in U.S.-born Hispanics, was 38% compared with 42% and 58% in blacks and non-Hispanic whites, respectively. Mean A1C was 7.7% in Hispanics and blacks compared with 7% in non-Hispanic whites.[3] Diabetes complications also occur more frequently in Hispanics than non-Hispanic whites, with

Received December 2, 2009, and in revised form October 7, 2010. Accepted for publication October 18, 2010.

Ola O. Oyetayo, PharmD, MSc, BCPS, was Pharmacotherapy Resident, College of Pharmacy, University of Texas at Austin, and University of Texas Health Science Center at San Antonio, at the time this study was conducted; he is currently Assistant Professor of Pharmacy Practice, Irma L. Rangel College of Pharmacy, Texas A&M Health Science Center, Kingsville, TX. **Clyde "C.J." James, BSPharm,** is National Account Director, AstraZeneca, San Antonio, TX. **Anita Martinez, BSPharm, CDE,** is Manager, Healthy Outcomes, Benefits, H-E-B Grocery Company, San Antonio, TX. **Kim Roberson, BSPharm,** is Senior Director, Professional Affairs, Texas Pharmacy Association, Austin. **Robert L. Talbert, PharmD, BCPS, FAHA, FCCP,** is Professor of Pharmacy, College of Pharmacy, University of Texas at Austin, and Professor of Medicine, University of Texas Health Science Center at San Antonio.

Correspondence: Ola O. Oyetayo, PharmD, Irma L. Rangel College of Pharmacy, Texas A&M Health Science Center, TAMU II Bldg., Room 303C, 2401 South 31st St., Temple, TX 76508. Fax: 254-724-1731. E-mail: oyetayo@pharmacy.tamhsc.edu

Disclosure: Mr. James is an employee of AstraZeneca and holds stocks options in AstraZeneca. The other authors declare no conflicts of interest or financial interests in any product or service mentioned in this article, including grants, employment, gifts, stock holdings, or honoraria.

Acknowledgments: To the Texas Pharmacy Association and AstraZeneca (the founding partners of the project); to H-E-B, Dermatological Pharmaceuticals of Texas, Humana, Outcomes Pharmaceutical Health Care, and Walgreens (the community-based coalition partners); to Bexar County Pharmacy and Bexar County Medical Associations, Senator Leticia VanDePutte, and Father David Garcia for support with development of the project; to Chris Frei, PharmD, for reviewing statistical methods; and to the patients who elected to participate in the study.

Funding: AstraZeneca.

Previous presentation: Alcalde XXIII Southwest Leadership Conference, Austin, TX, April 16–17, 2009.

Published concurrently in ***Pharmacy Today*** and the ***Journal of the American Pharmacists Association***.

Hispanics having higher rates of microvascular complications.[1] Similarly, they have lower rates of blood pressure and cholesterol control, which are key targets to reduce macrovascular complications.

Given the growing prevalence and lagging control of diabetes in Hispanics, a need exists for developing better approaches to improve diabetes care in the Hispanic population. Pharmacists are readily available and have been shown to improve outcomes for a variety of medical conditions, including hypertension, asthma, and diabetes.[4–7] To our knowledge, this is the first study to focus on the impact of pharmacists in Hispanic patients with diabetes.

Objective

We sought to assess the impact of community pharmacists on clinical outcomes in Hispanic patients with diabetes.

Methods

The Texas Hispanic Diabetes Management Program is a community pharmacist–led, patient-centered medication therapy management (MTM) program that was developed to improve diabetes care in Hispanic patients living in San Antonio, TX. The study was considered exempt from review by the University of Texas Health Science Center Institutional Review Board. Study participants were required to provide consent before enrolling.

AstraZeneca, in partnership with the Texas Pharmacy Association, established the Texas Hispanic Healthcare Coalition with employers and health care providers. Coalition participants included H-E-B (a Texas-based food and pharmacy company), Humana, Walgreens, and Dermatological Pharmaceuticals of Texas (DPT; a San Antonio–based pharmaceutical manufacturer). AstraZeneca provided funding for the project through Outcomes Pharmaceutical Health Care (Outcomes) and the Texas Pharmacy Association. Outcomes served as the third-party administrator for the project. The Texas Pharmacy Association received an unrestricted grant from AstraZeneca for educational tracks, tools, and resources to educate pharmacists and to support the development of a pharmacy network. The pharmacy network included pharmacists from H-E-B and Walgreens who elected to receive additional training in diabetes management. A total of 22 pharmacists received the training and were included in the pharmacy network; however, services were provided by 14 pharmacists only. The pharmacists attended a live 4-hour education session provided by an endocrinologist and a pharmacist with expertise in diabetes management. Compensation for services rendered by the pharmacists was provided through Outcomes.

The pharmacists used a Web-based system provided by Outcomes. The Outcomes system captured all necessary documentation for patient enrollment and progress through the protocol. Interacting with the system, pharmacists were able to create an MTM profile that included a master medication list and medication action plan. Pharmacists also were able to generate fax-ready prescriber communications from the Outcomes system in order to communicate drug therapy recommendations to appropriate prescribers. Consistency of documentation streamlined reporting processes for pharmacists and program administrators. The study protocol appears in Appendix 1 (electronic version of this article, available online at www.japha.org).

Employees of participating organizations (H-E-B, Walgreens, Humana, and DPT) were eligible to enroll if they had been diagnosed with type 2 diabetes and were of Hispanic descent. The criterion for Hispanic descent was met if at least one grandparent was of Hispanic descent. No other inclusion or exclusion criteria were applied. Participants were free to choose from any of the H-E-B or Walgreens pharmacies participating in the study as their primary site.

The pharmacist–patient interaction took place during a 12-month period. Initial enrollment began in 2004, and the final set of patients was enrolled in 2007. Participants had face-to-face meetings with pharmacists every 3 months for diabetes counseling and education that centered on increasing glycemic control by improving medication adherence, diet, and exercise. Participating pharmacies were not required to have private consultation areas. Other interventions included point-of-care testing for blood pressure, A1C, lipid parameters, and weight. Pharmacists also were encouraged to make drug therapy recommendations to patients' diabetes care providers.

Outcomes definition

Clinical outcomes data were collected at 3-month intervals for participants enrolled in the program. Data were collected on A1C, fasting plasma glucose, high-density lipoprotein (HDL) cholesterol, low-density lipoprotein (LDL) cholesterol, total cholesterol, triglycerides, body mass index (BMI), and weight.

Statistical analysis

Descriptive statistics were generated using JMP 7 software (SAS, Cary, NC) to summarize baseline demographics and laboratory parameters. Data were analyzed using intention-to-treat analysis. Statistical analysis was performed using paired t test for normally distributed data and Wilcoxon signed-rank test for non–normally distributed and ordinal data. The McNemar's chi-squared test was performed for nominal data. To account for missing data at visits or patients lost to follow-up, the last-observation-carried-forward (LOCF) method was used for data analysis. The last available values were substituted for missing values in patients lost to follow-up or with incomplete data at prespecified visits. An a priori significance level of $P < 0.05$ was used throughout the study. For analyses involving target values, the following values were defined as optimal using the American Diabetes Association (ADA) Standards of Medical Care in Diabetes guidelines: A1C less than 7%, LDL cholesterol less than 100 mg/dL, total cholesterol less than 200 mg/dL, triglycerides less than 150 mg/dL, SBP less than 130 mm Hg, DBP less than 80 mm Hg, BMI less than 25 kg/m^2, and HDL cholesterol greater than 40 mg/dL for men and greater than 50 mg/dL for women.[8]