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Pharmacists Form the Frontline Against Disparities in Diabetes

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Abstract
Pharmacist-led initiatives have recently emerged as viable strategies for reducing healthcare disparities in diabetes which, as the 7th leading cause of death in America, has increasingly become a concern for minority groups. Following a literature review that focuses on the main factors influencing disparities and pharmacy-led interventions in diabetes, two strategies are suggested to increase the role that pharmacists can play in reducing diabetes health care disparity: 1) develop culturally competent interventions to increase the ability of pharmacists to educate and counsel patients, and 2) increase pharmacists’ prescribing power within the health care provider team. Several studies link cost of treatment, socio-economic status, and racial differences with long-term adherence to diabetes medication and demonstrate that increased culturally competent pharmacist involvement in patient care can decrease costs and increase patient adherence, thereby reducing disparity. Pharmacists are critical to the formulation of interventions that seek to eliminate health care disparities.

Key Terms:
- Diabetes
- Pharmacist Role
- Health Disparity
Introduction

Healthcare reform is one of the most pressing and controversial challenges that the American people currently face. Despite the variety of viewpoints surrounding this issue, there is overwhelming agreement that health care disparities are a major source of inefficiency in the health care system. The ultimate goal of health care reform is the elimination of health care disparities across all disease states. In order to accomplish this goal, health care providers must focus on interventions that yield the greatest positive change in the shortest time, which implies targeting diseases which are most prevalent within the population.

Health care disparities are defined by observable inequalities in access to, use of, and quality of health care services within a population. Inequities in cost, quality and access to care are the preferred targets for provider led initiatives to eliminate disparity because of the influence that health care professionals have over the services that they provide. Although the incidence (percentage of new cases), prevalence (percentage of total cases) and mortality (percentage of deaths) of a disease within a specific population over a period of time may appear disparate, disparities in quality, cost or access to health care may not always be the root of the problem. Socioeconomic, environmental and genetic factors, among others, often account for disparities in specific diseases within a population, increasing the complexity involved in addressing this issue.

Providers seeking to construct effective interventions must consider both the prevalence and the significance of health disparities associated with specific disease targets. Because of the limited resources allocated for health disparity elimination, focusing on such diseases as diabetes, asthma, or hypertension, is necessary in order to achieve swift, significant success.

Diabetes deserves special consideration in Louisiana, where both the prevalence of the disease is high and health care disparities are significant.

We are proposing two interventions aimed at reducing health care disparities associated with diabetes: 1) develop culturally competent interventions to increase the ability of pharmacists to educate and counsel patients, and 2) increase pharmacists’ prescribing power within the health care provider team. First, we begin by demonstrating that diabetes is an appropriate target for interventions that aim to reduce health disparity. Next, we identify factors that influence health care disparities associated with adherence to diabetes treatment. Third, we present the two proposed interventions to decrease disparities in diabetes and, finally, we discuss the benefits and barriers of increasing pharmacist prescribing power.

Diabetes: A Target in Health Disparities

Diabetes is a broad classification used to categorize a group of lifelong chronic diseases. The most common type, Diabetes mellitus, is a disease in which the blood contains high levels of glucose (high blood sugar or hyperglycemia), either because the body does not produce enough insulin (type 1) or because cells do not respond to the insulin that is produced (type 2). The clinical implications of this pathology are far reaching. The Centers for Disease Control and Prevention (CDC) named diabetes as the foremost cause of renal failure, appendage amputation not associated with trauma, and new cases of adult onset blindness (2011). Additionally, diabetes is a major contributor to the incidence of heart disease and stroke, and ranked 7th in the top 10 causes of death in America (CDC, 2011).

Because type 1 diabetes is an autoimmune disease with genetic origins, health disparities
associated with this disease are caused by factors other than cost, quality or access to health care services. Type 2 diabetes, in contrast, is an acquired disease with risk factors including obesity, inactive lifestyle, and unhealthy nutritional habits. The impact of type 2 diabetes is both preventable and reversible if diagnosed and treated promptly. According to the CDC (2011), diabetes mellitus type 2 represents 90-95% of diagnosed cases. These characteristics of diabetes mellitus type 2 make this disease an ideal focal point for interventions that seek to reduce health care disparities. As a result, this paper is exclusively focused on health care disparities associated with diabetes mellitus type 2, formerly called non-insulin-dependent diabetes mellitus (NIDDM), and will be referred to here as “diabetes.”

Many initiatives address the increasing problems associated with diabetes disparity. Healthy People 2020 (HP 2020), sponsored by the U.S. Department of Health and Human Services, has undertaken the task of prioritizing goals with specific benchmarks for many diseases that are of particular concern to the American population. The stated intent of HP 2020 is to improve the health of all Americans, and not only addresses disparity directly, but also emphasizes the importance of patient education, compliance with diagnostic testing for diabetes and co-morbid diseases, engaging in healthy eating habits and the need for positive patient outcomes. The efficiency of any initiative in reducing health care disparities or disease prevalence can only be determined by measuring the outcomes of that initiative against a standard. The provision of these standards by HP 2020 has given health care providers the ability to implement successful initiatives that can both reduce the prevalence of diabetes and reduce health care disparities associated with the disease.

Factors Influencing Adherence to Diabetes Treatment

A literature review of factors associated with diabetes health care disparity found that the most relevant studies focused on the impact of two main factors contributing to disparities in adherence to treatment: 1) racial and ethnic differences, and 2) socioeconomic status.
Impact of race and ethnicity in adherence to treatment

Adherence to treatment is a major challenge to eliminating disparity. A retrospective cohort study (Trinacty et al., 2009) looked at racial disparity in adherence to long term diabetes drug regimens within the Boston area. The study accounted for accessibility and quality of care by using only those patients enrolled in a Health Maintenance Organization (HMO) that offered prescription coverage. Analyzing 10 years of prescription records along with data from clinical and pharmacy claims, the study demonstrates both long term and short term differences in adherence between races. Specifically, the study analyzed patient information with regard to prescriptions written and prescriptions filled for oral diabetes medication. The study ensured equal access to medication by considering 1,906 patients that had the same type of prescription coverage and assessed long term adherence by calculating the monthly average rate of adherence.

Interpretation of the data showed differences in adherence between races to varying degrees throughout the 24 month follow up, but the African American group consistently demonstrated higher rates of treatment cessation. By the end of the follow up assessment over half of the African American group had discontinued therapy for 60 days or more whereas only 44% of the Caucasian group had. This study shows that racial differences in compliance to a long term drug regimen for oral diabetes medication are significant, with African American patients being more likely to cease treatment than Caucasian patients. This study confirms that given equal access to diabetes drug treatment, there is a link between race and adherence to long term drug regimens.

Impact of low socio-economic status in adherence to treatment

Two studies (LaViest et al., 2009 and the Chernew et al., 2008) analyzed statistically significant relations between race/ethnicity, income, and adherence. Both studies concluded that income plays an important role in explaining racial/ethnic disparities in diabetes and that reducing the cost of medication for low-income patients can greatly contribute to reducing health disparities.

LaViest et al. (2009) demonstrated the effect income has on patient health outcomes by comparing two surveys. The first, Exploring Health Disparities in Integrated Communities-Southwest Baltimore (EHDIC-SWB), was a 2003 cross sectional study with 1489 participants of similar race and low economic status (LaViest et al., 2008). The second survey considered was the 2003 National Health Interview Survey (NHIS) conducted by the US Census Bureau with 29,372 participants who exhibited significant racial disparity with more African-American participants earning less than $10,000 a year than Caucasian. The results showed that the NHIS ratio of diabetes prevalence for African Americans compared to Caucasians was 1.57 while the EHDIC-SWB survey ratio was only 1.03. By comparing the NHIS survey with the EHDIC-SWB survey, the authors demonstrated that socio-economic inequality is linked with a racially disparate diabetes distribution and that a reduction in socio-economic inequality coincides with a reduction in racial/ethnic disparity. This analysis confirms that racial/ethnic disparity in diabetes is associated with socio-economic disparity.

Chernew et al. (2008) assessed socio-economic disparities in diabetes treatment using a large employer-based insurance company database (6 million workers) from 2002 to 2004. The authors considered diabetes and congestive heart failure and analyzed adherence to medication regimens and mean income by zip code as stated in the 2000 census. The study showed a 1.08 ratio of adherence to diabetes medication from high income to low income. The authors compared income by assessing four distinct income brackets.
The lowest income group earned less than $30,000 whereas the highest income group earned more than $62,000. In the diabetes group, the highest income bracket was 20% more compliant to drug regimens than the lowest income bracket. The authors concluded the study by proposing a co-pay relief intervention in order to increase adherence amongst those patients who have lower incomes. This study confirms that cost is a major contributor to socio-economic health care disparity.

Interventions to Decrease Disparities in Diabetes

A literature review of effective prevention techniques found that the most relevant studies focused on the impact of two main initiatives to decrease disparities: 1) implementation of culturally-competent interventions involving pharmacists counseling, and 2) increase of pharmacist’s prescribing power. Results of these studies confirm the important impact that empowering the pharmacist to provide expanded culturally competent services within a primary care team can have on increasing patient adherence and decreasing cost of treatment, and, as a result, on decreasing health disparities.

Impact of culturally-competent interventions on reducing disparities

A systematic literature review of interventions published between 1985 and 2006 (Peek, Cargill, and Huang, 2008), assessed the effects of education and counseling on diabetes disparity. This review compared 48 reports on 43 studies, two thirds of which were controlled. The authors classified the interventions into three categories: patient, provider, and system-wide interventions. All of the patient interventions involved patient education programs which focused on diet, exercise and self-management and were intended to increase adherence to recommended lifestyle modifications or self-assessment regimens including blood glucose testing. Provider-based interventions sought to improve patient outcomes by offering physician education and alert systems. The system-wide interventions utilized healthcare providers other than physicians, including registered nurses and pharmacists who offered increased clinical and medication management services, respectively, in order to reduce diabetes disparity.

Further division of the interventions differentiated those that were culturally tailored from those that were generally applied to all patients. Culturally tailored interventions attempted to consider the culture and individual characteristics of patients in order to most effectively impact patient adherence and improve patient outcomes. Although the patient interventions considered to be culturally sensitive did not consistently result in a reduction in target laboratory values, one-on-one consultation and peer counseling did improve patient health more than computer or automated initiatives did. The provider-based interventions offered no initiatives considered to be culturally ‘tailored’; however, the authors did infer that an increase in health care provider training for treatment of diabetes would lead to increased access to specialized diabetes care for minorities, which has the potential to reduce health care disparity in diabetes. Within the health system-wide intervention group two studies assessed pharmacist-led medication management and education, which resulted in lower HbA1c values, increased patient understanding of the disease and an increase in overall satisfaction with the health services provided. The study concluded that patient, provider, and system interventions can all be effectively employed to reduce health care disparity in diabetes. The most effective interventions were personalized, accounted for cultural differences and utilized the collaborative healthcare team model to increase positive patient outcomes and satisfaction.

Another study published by Morello (2011) analyzed the results of a cross-sectional
survey regarding self-adherence and methods perceived to be effective at increasing adherence, distributed amongst patients and caregivers attending the 2005 Taking Control of Your Diabetes conference in San Diego. Response rate was 40.5% with 524 total submissions. The authors found that three of the factors that most positively influenced medication therapy compliance involved patient understanding of the purpose, goals and complications of drug treatment regimens and recommended pharmacist-led initiatives to educate and counsel patients regarding the benefits of drug therapy and techniques to increase adherence. This study shows that culturally competent education and counseling can be effective methods for eliminating this particular factor of health care disparity.

Impact of pharmacist prescribing power on reducing treatment costs

Dole (2007) explored the benefits of adhering to the healthcare team model by examining the implications of pharmacist prescribing at a pain clinic in New Mexico. According to provisions enacted in 1993 under the Pharmacist Prescriptive Authority Act, clinical pharmacists are allowed to prescribe under the supervision and in collaboration with a physician in accordance with specified pre-determined protocols. Data collected included patient assessment of pain, cost savings, revenue generation, and adherence to medication safety standards. The results showed a significant reduction in patient pain and cost with a savings of nearly a half a million dollars to the insurance companies billed within one year. The revenue recorded by the clinic exceeded the salary of the pharmacist. Additionally, pharmacist involvement facilitated an increase to the efficacy of the triage process by eliminating the necessity of physicians seeing patients who required only medication management. This allowed the clinic to maintain adequate safety standards. Although this study does not address diabetes specifically, the conclusions may be applied to those disease states, like diabetes, that are both chronic and require ongoing medication therapy management.

Two interventions reported separately by Rodgers and colleagues (1999) and Walker & Mathers (2002) described the effects of both increasing pharmacist prescribing power and of the primary care group approach to health care on prescribing costs. Although these interventions did not address disparity directly, the lowering of prescribing costs assessed by these interventions can be applied to strategies that reduce diabetes health care disparity by reducing financial barriers to healthcare. The first intervention in Doncaster, England (Rogers et al., 1999) assessed the effects of a pharmacist intervention on prescribing costs and involved eight medical practices where pharmacists assisted by modifying drug regimens and offering patient counseling and education. The study assessed prescribing data, accounted for variance within the populations of the practices and noted significant differences between the control and test groups. The authors concluded that the intervention diminished enough of the prescribing costs to pay the pharmacists for their services.

The second intervention, a comparison study, in South Derbyshire, England (Walker & Mathers, 2002), included nine practices that had enacted a primary care group initiative in which a pharmaceutical advisor was employed to consult, provide feedback, and make recommendations. The authors assessed prescribing data regarding cost and compared the results to a control group. Test group expenditures dropped below the control group’s expenditures within one month of employing the initiative. This study demonstrates how collaborative prescribing by professionally diverse members of a health care team can lower prescribing costs. Together, these studies show that increasing the role of the pharmacist within the health care team can effectively reduce prescribing costs. This will have the greatest effect.
on disparity for those diseases like diabetes, which are most prevalent and which require the most drug intensive treatment.

**Barriers to and Benefits of Pharmacists Prescribing Power**

California, Florida, New Mexico, Washington and health services provided by the federal government including the Veterans Health Administration have pioneered the way for increasing the role of the pharmacists within the health care team. Florida was one of the first states to enact any kind of provision for pharmacist prescribing giving pharmacists the “outright statutory authority” to “independently” prescribe a limited list of drugs.

Doering (2007) reviewed the history of the Florida statute along with some of the pitfalls and benefits of the law. The author sees a number of problems with increasing pharmacist prescriptive authority which echoes many of the objections that opponents to pharmacist prescribing have raised. The more important objection is patient safety and the potential for misdiagnosis. Pharmacists lack extensive diagnostic training and should not attempt to expand their scope of practice beyond their education. Rather, the focus of the pharmacist as a patient care provider should be on the management of patient medication regimens and the provision of patient education. Doering, in spite of his misgivings, conceded that pharmacist prescribing can lead to a decrease in cost and an increase in patient satisfaction. As long as the lessons learned from the Florida model can be incorporated into interventions that increase the role of the pharmacist within the health care team, cost can be reduced without sacrificing patient safety. These initiatives will provide the most useful information about the cost benefits, safety and efficacy of pharmacist prescribing which may assist the rest of the nation in adopting similar policies.

In order to implement a policy that increases the pharmacist’s power to treat diabetes and educate patients, three distinct phases would have to occur. The first is legislative. In his retrospective analysis of Florida’s prescribing laws, Doering (2007) describes the process by which prescriptive authority policy is constructed and asserts that this process occurs exclusively at the state level. Policy regarding pharmacist prescriptive authority throughout American history has swung with public sentiment on a pendulum between two opposing social values: safety and accessibility. Over the last 40 years, as public sentiment has shifted away from safety and regulation in favor of increased accessibility, more and more states have drafted legislation that expands the scope of pharmacist prescriptive authority. The first states to enact these policies, however, did not have access to the extensive body of data that is available for policy makers today. The assessment of the initiatives enacted by these progressive states is critical to the discussion of expanding pharmacists’ prescriptive authority in states that have not already enacted similar policies. Support for these initiatives will only come from lawmakers of states more apprehensive to increasing the scope of pharmacy practice after both the safety and efficacy of pharmacist prescribing is confirmed. Although this data continues to accumulate as more states implement and assess the outcomes of these initiatives, many more studies are needed in order to demonstrate a positive impact on diabetes and diabetes-related illnesses, particularly within minority communities.

Once the political road has been paved, pharmacists would have to prepare themselves for an increase in responsibilities. A certification process would need to be enacted. Shane-McWhorter (2005) wrote a recommendation for the scope of pharmaceutical practice which specifically describes the role pharmacists play as diabetes educators. This recommendation emphasizes the need for pharmacists to receive...
certified, ongoing, disease-specific education in order to educate their patients. Not only should pharmacists be subjected to intensive education regarding all aspects of the disease, but they should also be educated on how to relay that information effectively to their patients. Both of these educational requirements would have to be above and beyond the standard pharmacy education and would most certainly require ongoing re-certification.

The third phase of these initiatives would involve corporate restructuring. As local pharmacies begin to offer expanded services to their patients, the companies behind these pharmacies would have to devise new staffing and billing solutions. An analysis of the ways in which pharmacists have contributed to diabetes care in America by Armour et al. (2009) concluded that despite the significant reduction in costs associated with increasing the role of the pharmacist in patient care and education, the process by which pharmacists receive compensation for these services is often inefficient. Additionally, the goal of these initiatives is not to eliminate physician participation, but to utilize the untapped resources that pharmacists are able to offer. The health care team model functions most efficiently when power is disseminated amongst all members. In order to maintain the structure of the health care team model, pharmacy corporations would have to construct an appropriate network of physicians and other health care providers into which the expanded role of the pharmacist must be integrated. The pharmacist must be provided with access to a health care team for consultation in order to maximize positive patient outcomes.

Increasing the power of pharmacists to treat diabetes and educate patients will have a bilateral effect on the disease by reducing both disparity and prevalence. These initiatives will have the greatest positive effects in areas like Louisiana that have high diabetes prevalence and disparity. Healthy People 2020 suggested that the increasing prevalence of diabetes may cause dwindling attention and resources available to treat the disease. The lack of resources is most hard felt within minority communities. In order to stem the tide of diabetes affliction, patients need access to affordable health care and education.

One way to increase the number of diabetes health care providers while decreasing costs is to empower pharmacists to treat patients within specific disease states by prescribing and managing drug treatment regimens. Increasing the role of pharmacists within the framework of the health care team has the potential to alleviate many of the burdens of inefficiency placed upon the health care system by disparity and lack of access. Those patients who are least likely to see a physician regularly would benefit the most. Development and implementation of a drug treatment strategy could occur at any number of local pharmacies which would drastically increase the number of facilities providing these services. Additionally, those pharmacists who are empowered to treat diabetes will also be in a unique position to offer education and counseling that is culturally specific to the community that they serve. Increasing education has been linked with increased adherence, which for diseases with long term drug regimens like diabetes, often diverges along racial and socio-economic lines.

Conclusion

Because of the high rate of diabetes prevalence, eliminating diabetes disparity is a critical goal of health care reform in Louisiana. Both cost and adherence to treatment are major obstacles to achieving equitable access to health care for minority groups. Studies described in this literature review show that decreasing the cost of diabetes treatment while offering individual patients comprehensive, culturally targeted education will result in a decrease in health care
disparities with regard to both financial accessibility and adherence to treatment.

Provider-led interventions are crucial to the movement to eliminate diabetes health care disparity and can be of great benefit to communities that are both racial/ethnic minorities and those of lower income; these are the communities most in need of relief in Louisiana. Pharmacists have begun to play a frontline role in disparity elimination and have the potential to significantly reduce many of the factors that contribute to diabetes disparity. Pharmacist-led interventions conducted by empowered pharmacists capable of taking on more responsibilities within the primary care team and offering effective personalized patient counseling and education, can reduce health care disparity in diabetes treatment by decreasing prescribing costs and making specialized diabetes care more accessible to lower income and minority patients.

Limitations and Recommendations

The greatest challenge to an intervention that seeks to increase pharmacist influence is the construction of an infrastructure that can accommodate the expansion of the pharmacist’s role while maintaining the safety and efficacy of treatment. Accountability of pharmacists to a health care team would have to be established before lawmakers and accrediting organizations could stand behind any initiative that expands prescribing power. Concentration of prescribing and dispensing powers is commonly seen as a safety concern. A network of health care providers must be available for pharmacists to consult with regarding course of treatment for patients in order to maintain accountability. Recent advances in communication technology are making the possibility of such a network an increasing reality.

Cost is a challenge to the initiative to provide pharmacists with cultural competence and effective counseling training. In addition to the training costs, the time required to perform consultations represents labor costs. Pharmacies would have to staff according to the new demands associated with increased consultation and develop standards by which they can be reciprocated for their services.

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es/aade/_resources/pdf/PharmDScopeStandards.pdf


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