Bridging Gaps: Exploring the Impact of Pharmacist Diabetes Interventions on A1C in Racially Diverse Populations - A Systematic Review

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Background

Type 2 Diabetes Mellitus is a chronic disease that results in high blood glucose due to insulin resistance. Its prevalence is steadily increasing across diverse populations, and if poorly managed, may cause serious health conditions over time. However, diabetes management is not a one-size-fits-all approach; it requires patient-centered interventions that address the unique needs and challenges faced by various racial and ethnic groups. Pharmacists are the most well-positioned to bridge healthcare disparities and optimize outcomes for individuals with diabetes.

PRISMA Flow chart

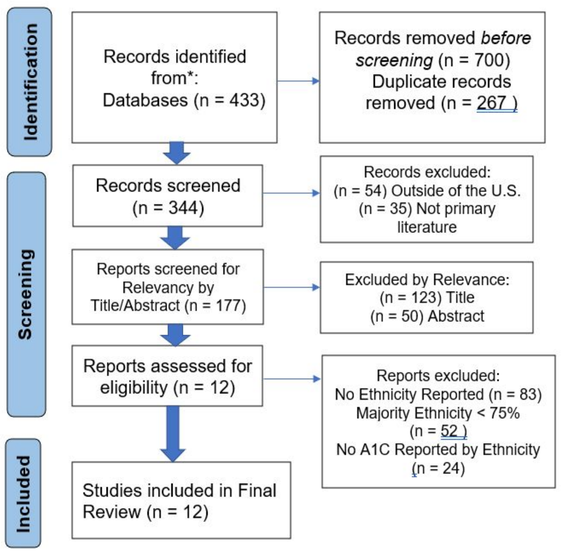

Figure 1: Self made PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) Flow diagram of selection of eligible studies, inclusion criteria, and exclusion criteria. Design sourced from PRISMA-statement.org.

Limitations

- Small patient sizes in selected studies.
- Comorbidities of patients in study group may be confounding factor.
- Variations in protocol of pharmacist intervention.
- Various different baseline Hb1ac.
- Differences in health insurance coverage among studies

Methods

Search terms utilized included pharmacist intervention, A1C, and diabetes across 2 major databases, Pubmed and Web of Science, focusing on primary literature. Duplicate results studies were screened out according to the PMID and title using Excel. Articles were screened out using exclusion criteria, such as A1C not being reported by ethnicity. Relevancy of articles were initially screened based on the title and abstract.

Data & Results

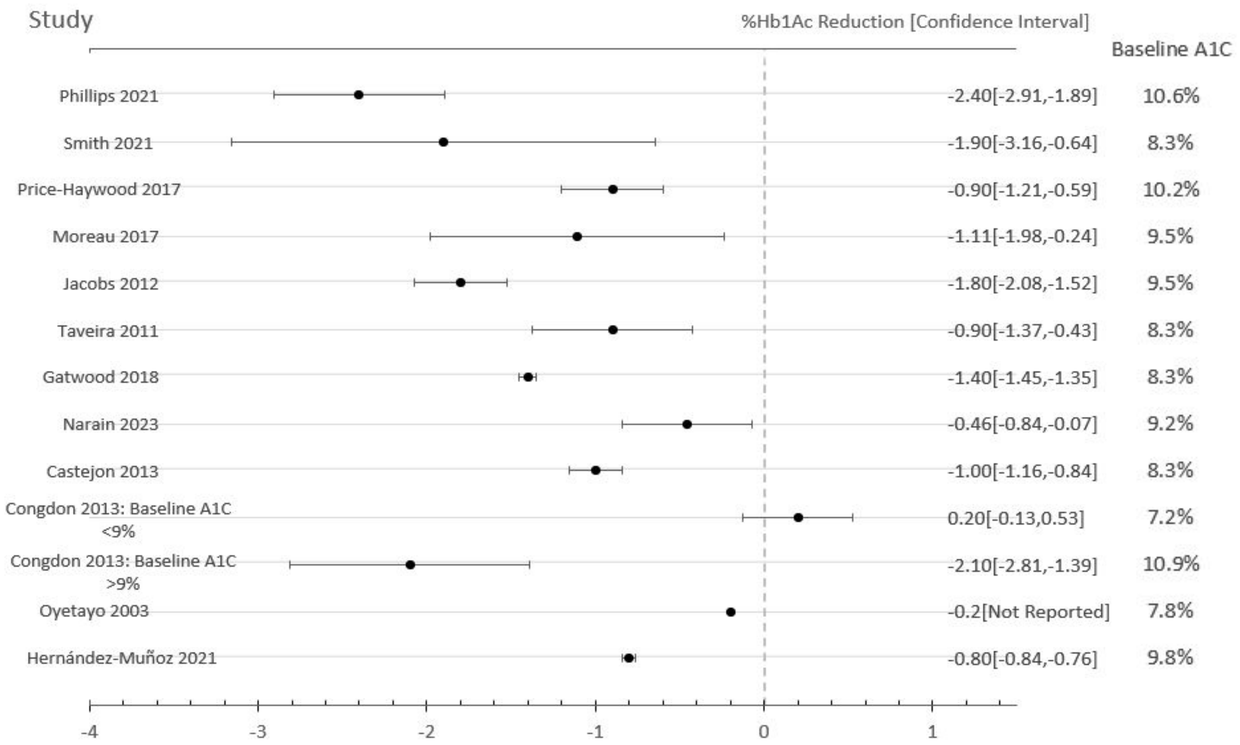

Figure 2. Self made forest plot in excel comparing the average reduction of HbA1c across the main studies analyzed. Data was pulled from each article respectively on the left side of the figure and compiled into forest plot. 95% confidence intervals were either parsed directly from the article itself or calculated using the standard error/standard deviation provided in the article. The average baseline A1c for the population in the study is also labeled at the right side of the figure.

Results: Data analysis across a multitude of primary care clinics in the United States where pharmacists intervened on diabetes management revealed a A1C reduction in patients of various ethnicities. There was an average A1C reduction of 1.45% in Caucasian patients, 1.57% in African American patients, and 0.73% in Hispanic patients.

African American: The greatest decrease was observed in Philips et al, but the baseline average A1C was relatively high at 10.6. Smith et.al yielded a variability of reduction of HbA1C. Overall, all 3 African American labeled studies yielded a significant reduction in A1C.
White: All studies yielded a significant decrease in A1C. 2 of the articles, Moreau et. al and Jacobs et al also had a high baseline of 9.5%.
Hispanic: 3 out of the 5 studies demonstrated significant reductions in A1C such as the Narain et al, Castejon et. al, and Hernandez-Munoz et. al. Congdon et al in particular demonstrated the greatest reduction, an average of -2.1% reduction [-2.81,-1.39]. However, the baseline was also significantly high at 10.9% with a low sample size. The other group or population in the Congdon study started at a baseline of 7.2% and did not yield any significant decreases and in fact caused a slight, but insignificant increase in the HbA1C.

Discussion

African American: The studies with majority African American population showed that patients benefited from collaborative practice. Meeting Frequently with the pharmacist was helpful with this population. In a study that made medications free with regular pharmacist consultations, the patients had a significant reduction in A1C. There is a correlation between mental health and diabetes. In one study, Patients who had a higher baseline PHQ-9 scores had greater A1C reduction after the pharmacist intervention without adjusting depression medications. The barrier to access mental health resources should be examined further.
White: One study measured the baseline PHQ-9 and found on average there was PHQ-9 of 10.6 which may indicate mild depression. Post intervention, there was a slight decrease in the PHQ-9 score across both the control and intervention group.
Hispanic: 2 of Hispanic studies having a higher baseline A1C resulted in greater overall decrease in HbA1C. There were also more significant reductions in A1C if the majority of the sample population spoke the same language as the pharmacist that were part of the intervention regardless of the actual language. Having remote translation service for hispanic or english did not result in nearly as effective a reduction in A1C compared to directly speaking with the pharmacist/other interventionists.

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