

# Racial Disparities in Clinical Outcomes and Treatment Adherence Among Patients with Chronic Diseases in the US: A Real-World Study Using Integrated EHR & Claims Database

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## Introduction

- Diabetes, chronic kidney disease, and Congestive Heart Failure are all major public health challenges in the US.
- In the US, 6 in 10 Adults have one of these chronic disease which is a leading driver of the Nation's \$4.1 Trillion in Annual Health Care Costs1.
- Unfortunately, racial and ethnic minorities are at higher risk of developing these diseases and are more likely to experience poor outcomes and lower adherence to treatment plans. The consequences of these disparities are significant on the patient as well as on the healthcare system. Such patients are more likely to have more complications, hospitalizations and thus lower quality of life.
- It is thus crucial to identify and address these disparities to ensure improved healthcare outcomes.

## Objective

- The aim of our analyses is to explore racial disparity in clinical outcomes and treatment adherence among patients with diabetes (T2DM), chronic kidney disease (CKD), and chronic heart failure (CHF).

## Methods

- Real world data was comprehensively used from Optum® de-identified Market Clarity database, which links EHR and multi-payer claims data
- Incident patients in study period of Jan 2017 – Dec 2020 who had continuous eligibility in the pre- and post-index period of 12 months and high severity in disease condition were considered for the analysis.
- For measuring severity of disease, laboratory test results with a mean baseline value of HbA1c >9% for T2DM, eGFR < 29 for CKD and LVEF < 30% for CHF were considered from the EHR data
- For treatment adherence of these severe incident patients, the mean proportion of days covered (PDC) was used
- Propensity score matching (PSM) using co-variates as age and gender was applied and statistics were performed to measure if the difference in mean clinical outcomes among races is significantly different or not

## Results

- We've considered Caucasians as base and calculated clinical outcomes and adherence of other races in comparison
- In T2DM, adjusting for other demographic variables, clinical outcome was found to be significantly worse for African-Americans (0.27 units; p= 0.0087) and Asians (0.42 units; p=0.0313) in comparison to Caucasians.
- In CHF, LVEF for both African-Americans (-3.9 units; p<.0001) and Hispanics (-5.7 units; p=0.0017) showed significantly worse clinical outcomes in comparison to Caucasians.
- In CKD, eGFR for both African-Americans (-9.1 units; p<.0001) and Hispanics (-9.0 units; p=0.0291) showed significantly worse clinical outcomes in comparison to Caucasians
- In T2DM drugs, an overall mean PDC difference of 9% in African-Americans (PDC=47%) was observed.
- For metformin, used in T2DM, a mean PDC reduction of 13.5% in African-Americans (PDC=56%) and 2.6% in Hispanics (PDC=68%) was observed. This resulted in 49 & 9 days lesser supply of metformin, respectively.

## Results

Fig.1: Difference In HbA1c

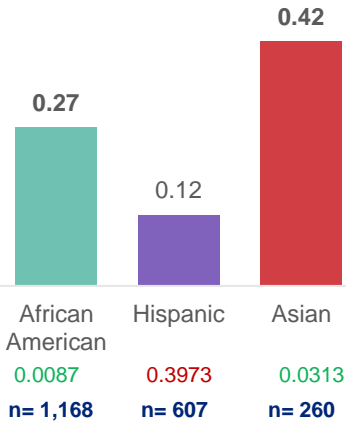


Fig.2: Difference In LVEF

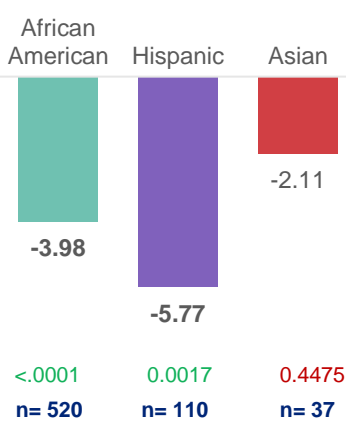
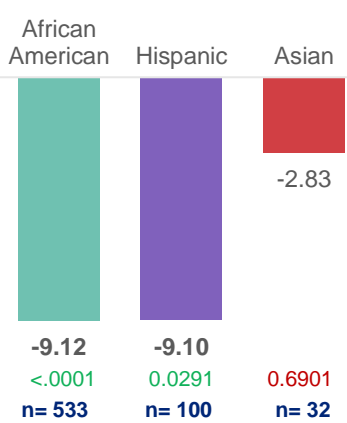


Fig.3: Difference In eGFR



P values highlighted above in red suggest no significant difference

- For Furosemide, a drug used in CHF, a mean PDC difference of 8% in African-Americans (PDC=63%) and 5% in Hispanics (PDC=67%) was observed.
- Similarly, while comparing mean adherence for Furosemide with Caucasians as base, a mean PDC reduction of 1.3% in African-Americans (PDC=48%) and 24% in Asian (PDC=40%) was observed. This resulted in 5 & 88 days lesser supply of furosemide, respectively.
- Comparable findings were seen for CKD treatment modalities as well.

## Conclusion

- In reference to the Caucasians, a prominent trend of inferior clinical outcomes and reduced mean adherence was observed among African-Americans and Hispanics for all three chronic disease conditions.
- Mean adherence was found to be less in African-Americans when compared to Caucasians in both T2DM and CHF.
- Additional analysis of patient journey and treatment pathways should be performed to better understand the disease burden on ethno-racial groups.
- Integrated database provides a complete picture of clinical

