Racial Disparities in Hypertension (RADISH): Decomposing the effects of risk factor distribution and risk factor impact on racial disparities

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Title: Racial Disparities in Hypertension (RADISH): Decomposing the effects of risk factor distribution and risk factor impact on racial disparities
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Background/Purpose:
Nearly half of Americans with hypertension (HTN) have uncontrolled blood pressure (BP). Control rates are consistently higher in Whites than Blacks. The purpose of this study is to identify covariates that contribute to racial disparities in BP control using the Oaxaca-Blinder decomposition method (OBDM).
Methods: We included White and Black patients ≥ 21 years of age; ≥ 2 outpatient diagnoses of HTN; and ≥ 2 BP measures. Uncontrolled BP was defined as ≥ 2 BP measures ≥ 140/90 mmHg. Covariates of interest included: demographics; baseline BP measures; clinical factors; utilization; provider characteristics; and engagement with health care. Distributions of covariates were calculated by race; multivariable logistic regression models were constructed overall and by race; and OBDM was used to determine the proportion of the racial disparity in uncontrolled BP that could be reduced by equalizing select characteristics, and the proportion of the disparity due to differential impact of covariates.
Results: We identified 34,900 adult KPMAS patients, of whom 15,907 (46%) had uncontrolled BP and 22,363 (64%) were Black. Uncontrolled BP occurred in 48% of Blacks compared to 41% in Whites. Blacks were significantly younger and more likely to have: household income < $25,000; diabetes; female gender; and higher average SBP. Blacks were less likely to engage with KP.org and have race-concordant providers. In a multivariable logistic regression model, Blacks had a 20% increased odds of having uncontrolled BP. The contribution of the differences in the average values of the study covariates between Blacks and Whites (OBDM covariate effect) accounted for 40% of the overall racial disparity. Age and kp.org use contributed to worsening the White-Black disparity by 22% and 8% respectively, while gender baseline SBP, and diabetes contributed to diminishing the disparity by 5%.
Conclusions: It may not be possible to reduce the racial disparity in uncontrolled BP by equalizing the currently reported covariate values in Blacks and Whites (since many of these covariates are non-modifiable). Supplementing health system data with patient-reported outcome may be needed to effectively use OBDM and parse contributors of disparity.

Results to Date: [see attached poster]

Conclusions to Date: [see attached poster]
- Our study suggests that modifying differences in anti-HTN medication adherence, BMI, and LDL cholesterol may have a small but measurable impact on reducing the disparity in uncontrolled BP between Blacks and Whites
- The factor with the strongest influence on the disparity in uncontrolled BP between Blacks and Whites was the coefficient effect of age
    - It is not clear why age affects uncontrolled BP differently in Blacks vs Whites, however, the cause may be (at least in part) genetic factors that cannot be addressed to reduce racial disparities

- Unmeasured covariates contributed strongly to the racial disparity in uncontrolled BP, indicating that data from our EHR alone may not be sufficient
- Additional patient-reported covariates (such as lifestyle factors, diet, perceived discrimination, patient activation, etc.) are needed to fully take advantage of the OBDM approach