

Background

- Nephrolithiasis is a growing public health problem in the United States.
- While nephrolithiasis is more common in men, the gender ratio is decreasing [1].
- Significant increases in stone prevalence have been reported for Black and Hispanic patients in the U.S. [2].
- The gender-specific contribution to this trend requires further evaluation.

Objective

- **To evaluate the distribution of stone formers by gender, race, and ethnicity in contemporary cohorts.**

Methods

- Patients with a nephrolithiasis diagnosis (ICD-10 code N20) at two large academic medical centers from 1/2015-6/2020 were identified and stratified by location:
 - University of Alabama at Birmingham Medical Center (*Birmingham Cohort*).
 - University of Texas Southwestern Medical Center/Parkland Memorial Hospital (*Dallas Cohort*).
- Gender, race, and ethnicity were determined using electronic medical record search tools at each center.
- Differences in gender distribution among Black/White and Hispanic/non-Hispanic stone formers were assessed using Fisher's exact test.



Figure 1 Electronic medical record search tools: Cerner + Informatics for Integrating Biology & the Bedside (Birmingham Cohort); Epic + SlicerDicer (Dallas Cohort).

Results

		Birmingham	<i>p</i>	Dallas	<i>p</i>
Race	Black female	2,992 (12.0%)	<0.001	4,398 (9.0%)	<0.001
	Black male	2,356 (9.4%)		3,422 (7.0%)	
	White female	8,653 (34.6%)		19,530 (40.2%)	
	White male	11,004 (44.0%)		21,282 (43.8%)	
	Total	25,005	48,632		
Ethnicity	Hispanic female	178 (0.7%)	0.06	10,451 (20.0%)	<0.001
	Hispanic male	164 (0.7%)		9,448 (18.1%)	
	Non-Hispanic female	11,401 (46.1%)		15,013 (28.8%)	
	Non-Hispanic male	12,999 (52.5%)		17,244 (33.1%)	
	Total	24,742	52,156		

Table 1 Distribution of stone formers at academic medical centers in the Birmingham and Dallas Cohorts from 1/2015-6/2020 based on gender, race, and ethnicity. *p*-values correspond to the difference in percentage of women for Black vs. White and Hispanic vs. non-Hispanic stone formers.

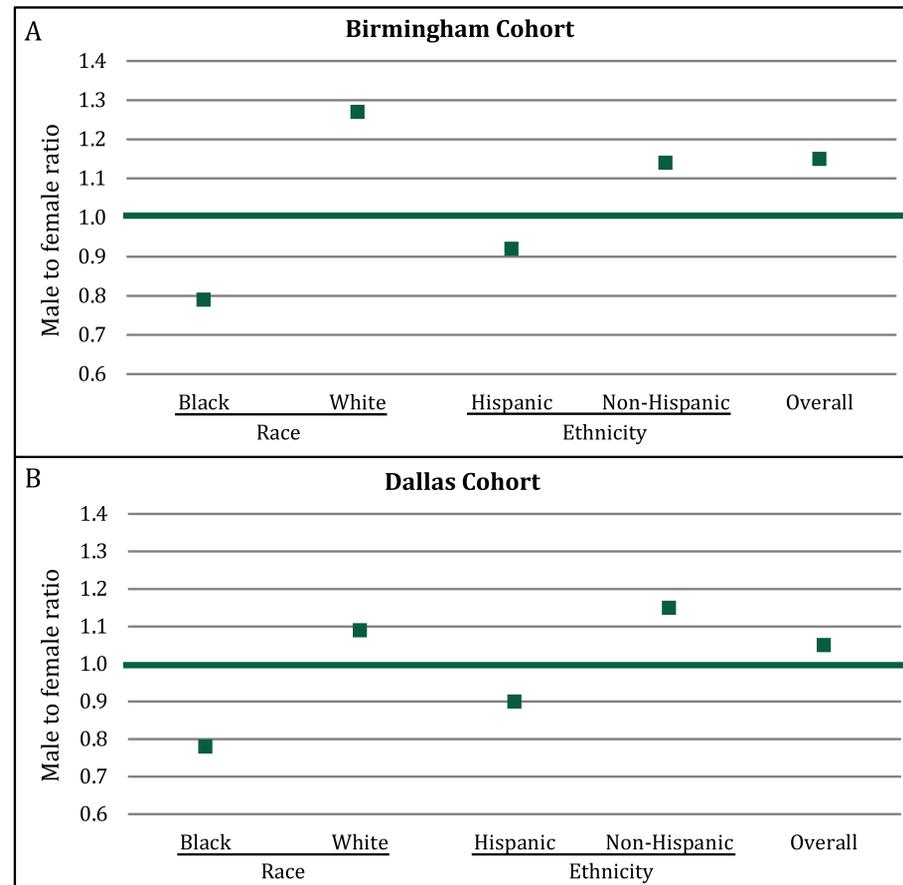


Figure 2 Male to female ratios among stone formers in the (A) Birmingham and (B) Dallas Cohorts based on race and ethnicity.

Cohort characteristics

- 77,161 total stone formers with race and/or ethnicity data available.
- Birmingham Cohort had a greater percentage of Black stone formers compared to Dallas Cohort (21% vs. 16%).
- Dallas Cohort had a greater percentage of Hispanic stone formers compared to Birmingham Cohort (38% vs. 1%).

Gender ratio differences

- Majority of Black and Hispanic stone formers in both cohorts were female.
- Majority of White and non-Hispanic stone formers in both cohorts were male.
- In both cohorts, the percentage of women was significantly greater among Black stone formers compared to White stone formers.
- In the Dallas Cohort, the percentage of women was significantly greater among Hispanic stone formers compared to non-Hispanic stone formers.
- The above relationship did not meet conventional levels of statistical significance in the Birmingham Cohort.

Conclusions

- **At academic medical centers in two large cities, the majority of Black and Hispanic stone formers are female, whereas the majority of White and non-Hispanic stone formers are male, demonstrating a significant difference in gender distribution.**
- **Nephrolithiasis in Black and Hispanic women may be driving increases in prevalence reported for Black and Hispanic individuals.**
- **Further evaluation of these findings and their potential associations with obesity, chronic medical conditions, and socioeconomic variables is needed in order to understand disparities in kidney stone disease.**

References

- [1] Tundo G et al. Gender equivalence in the prevalence of nephrolithiasis among adults younger than 50 years in the United States. *J Urol*. 2018; 200:1273-7.
- [2] Abufaraj M et al. Prevalence and trends in kidney stone among adults in the USA: analyses of National Health and Nutrition Examination Survey 2007-2018 data. *Eur Urol Focus* in press.