

# Utilization of CT Scan in Premenopausal Women Presenting With Non-Traumatic Abdominal Pain

Sean-Patrick Prince, MD, MPH, Qitan Huang, DO, Denisse Camille Dayto, MD, Andrew Sephien, MD, Trupti Shinde, MD



## Background

- Abdominal and pelvic computed tomography (CTAP) has long been considered the test of choice for abdominal pain.
- Unfortunately, its ready availability and diagnostic value has led to over-utilization, and an increased theoretical risk of malignancy due to radiation exposure.
- We hypothesize that because women are more likely to present with acute abdominal pain, they would be more likely to be subjected to imaging studies and radiation.

## Objective

- The purpose of this study was to assess the difference in the utilization of CTAP among young men and women who present with non-traumatic abdominal pain.

## Methods

- This retrospective cohort study was conducted between 01/2017 - 12/2019.
- All patients who presented to the emergency department between the ages of 18 – 45 years old with acute abdominal pain were included.
- Patients who had a previous history of abdominal pathology or acute abdominal pain secondary to trauma were excluded. Patient demographic and medical comorbidity information was collected.
- Logistic regression analysis was performed to determine the effect of gender on the likelihood of CTAP imaging and reported as odds ratios (OR) with 95% confidence intervals (CI) with a significance of 5%.

## Results

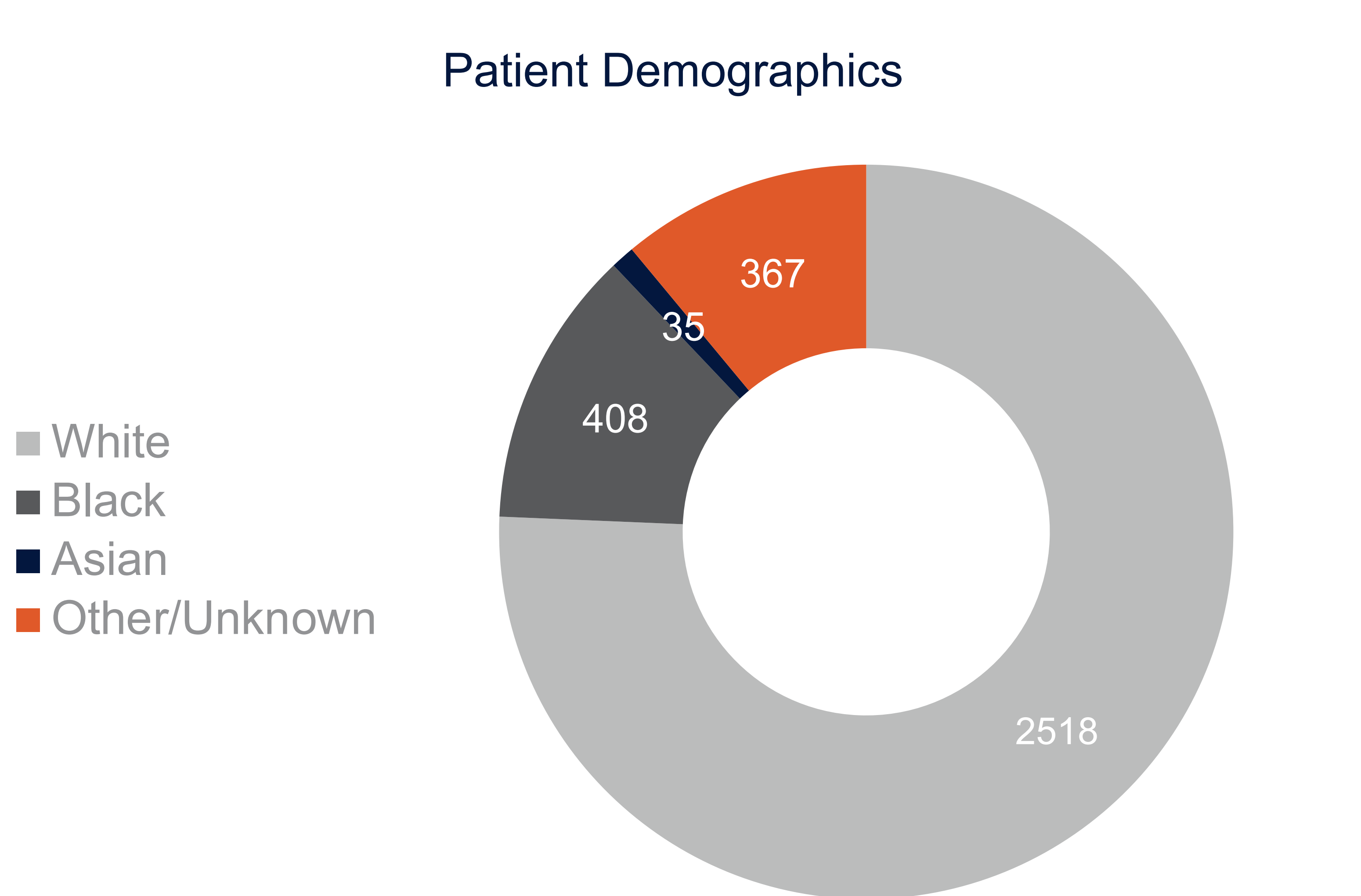


Figure 1

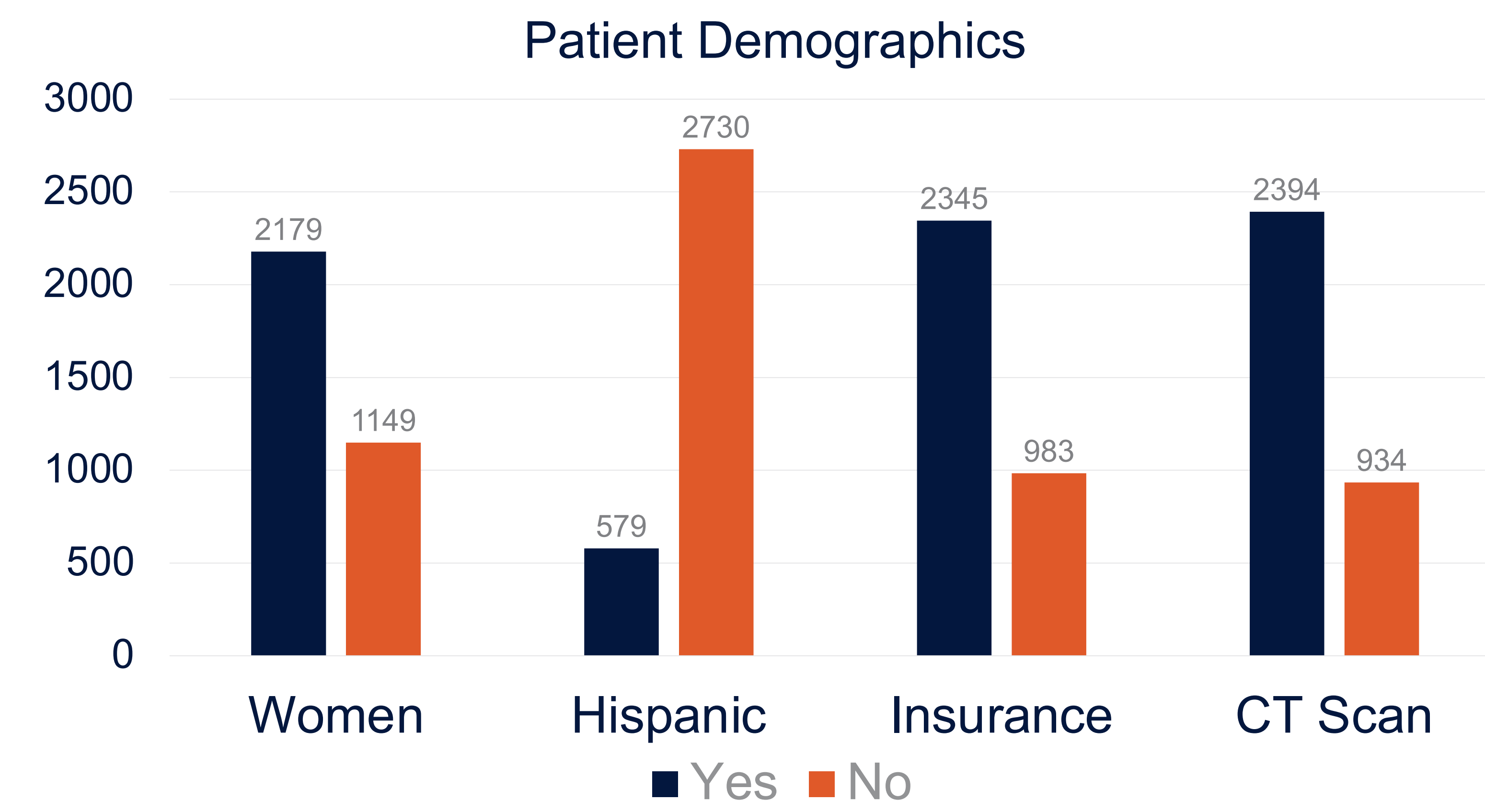


Figure 2

	Coefficient Estimate (95% CI)	Odds Ratio (95% CI)	P-Value
Female Patients	-0.23 (-0.40, -0.06)	0.92 (0.63, 1.35)	0.01
Uninsured	0.24 (0.07, 0.42)	1.27 (1.07, 1.52)	0.01
Age	0.03 (0.02, 0.04)	1.03 (1.02, 1.04)	<0.001

Figure 3

## Results

- A total of 3,328 patients with a mean age of 33.5, were enrolled with the majority patients being women (65.5%).
- Demographic information noted that 75.7% were white, 12.3% were black, 1% were Asian and 11% identified as other/unknown.
- Overall, the study included 2,345 insured patients with 71.9% of all patients receiving a CT scan.
- Adjusted analysis revealed that women were significantly less likely than men to receive CTAP (OR 0.79, 95% CI (0.67, 0.94), p = 0.01).
- Uninsured patients were significantly more likely than insured patients to receive CTAP (OR 1.27, 95% CI (0.1.07, 0.52), p = 0.01).
- Regarding age, for every 1-year increase in patient age, there was a corresponding 3% increase in the patient's odds of receiving a CT scan (OR 1.03, 95% CI, [1.02, 1.04], p< 0.001).

## Conclusion

- Despite most patients being women, they were found to be less likely to undergo CTAP for acute abdominal pain.
- These results could represent an underutilization of CTAP in women and additional studies are needed to elicit the impact of this underutilization and adverse patient outcomes.

## References

- Systemans BJ, Devitt PG. Computed tomography in acute abdominal pain: an overused investigation?. *ANZ J Surg.* 2014;84(3):155-159. doi:10.1111/ans.12360
- Tonolini M, Valconi E, Vanzulli A, Bianco R. Radiation overexposure from repeated CT scans in young adults with acute abdominal pain. *Emerg Radiol.* 2018;25(1):21-27. doi:10.1007/s10140-017-1554-y
- Mwinyogle AA, Bhatt A, Ogbuagu OU, Dhillon N, Sill A, Kowdley GC. Use of CT Scans for Abdominal Pain in the ED: Factors in Choice. *Am Surg.* 2020;86(4):324-333.
- Al Naemi H, Aly A, Kharita MH, et al. Multiphase abdomen-pelvis CT in women of childbearing potential (WOCBP): Justification and radiation dose. *Medicine (Baltimore).* 2020;99(4):e18485. doi:10.1097/MD.00000000000018485



This research was supported (in whole or in part) by HCA Healthcare and/or an HCA Healthcare affiliated entity. The views expressed in this publication represent those of the author(s) and do not necessarily represent the official views of HCA Healthcare or any of its affiliated entities.