

# Hyperthyroid State Is Associated with Reduced Mortality in Patients Admitted for Nonvariceal Upper Gastrointestinal Bleeding

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## Background

Through an uncertain mechanism, previous animal models proved that thyroid hormones act on mucosal lesions and reduce the formation of gastric stress ulcers. In this study, authors aim to investigate the influence of hyperthyroid state on outcomes of patients with non-variceal upper gastrointestinal bleeding (NVUGIB). Up to our knowledge, such association have never been studied in literature before.

## Methods and Materials

This is a retrospective cohort examining data from the National Inpatient Sample (NIS) Database of the years 2016 to 2019. Using ICD-10 codes, authors identified hyperthyroid and non-hyperthyroid patients who were principally hospitalized for NVUGIB. Univariate and Multivariate logistic regression analysis was performed to determine the risk of mortality and in-hospital complications. Baseline patients and facilities characteristics were incorporated into the analysis. Data was considered statistically significant with p-value < 0.05.

## Results

A total of 1,638,754 patients were identified with a principal diagnosis of non-variceal UGIB, among those 7,205 (0.43%) had a history of hyperthyroidism. Study groups baseline comorbidities are illustrated in figure 1. After running a multivariate logistic analysis for inpatient mortality, patients with non-variceal UGIB and hyperthyroidism had a 38% reduction in risk of mortality (OR 0.62, 95% CI 0.40 – 0.97, P= 0.039) compared to non-hyperthyroid subjects. In term of secondary outcomes, both groups had no difference in risk of sepsis (OR 0.74, 95% CI 0.50 – 1.09, P= 0.135), hypovolemic shock (OR 1.03, 95% CI 0.74 – 1.43, p=0.853), acute kidney injury (OR 1.06, 95% CI 0.92 – 1.21, p=0.394), acute respiratory failure (OR 0.73, 95% CI 0.54 – 1.00, p=0.050), acute coronary syndrome (OR 1.27, 95% CI 0.95 – 1.71, p=0.097) and In-hospital cardiac arrest (OR 0.62, 95% CI 0.17 – 2.17, p=0.457). Length of stay (aMD 0.33 days, 95% CI -0.09– 0.77, p=0.124) and charges of care (aMD 6146\$, 95% CI -852.3– 13145, p=0.085) were not affected by hyperthyroid state as well.

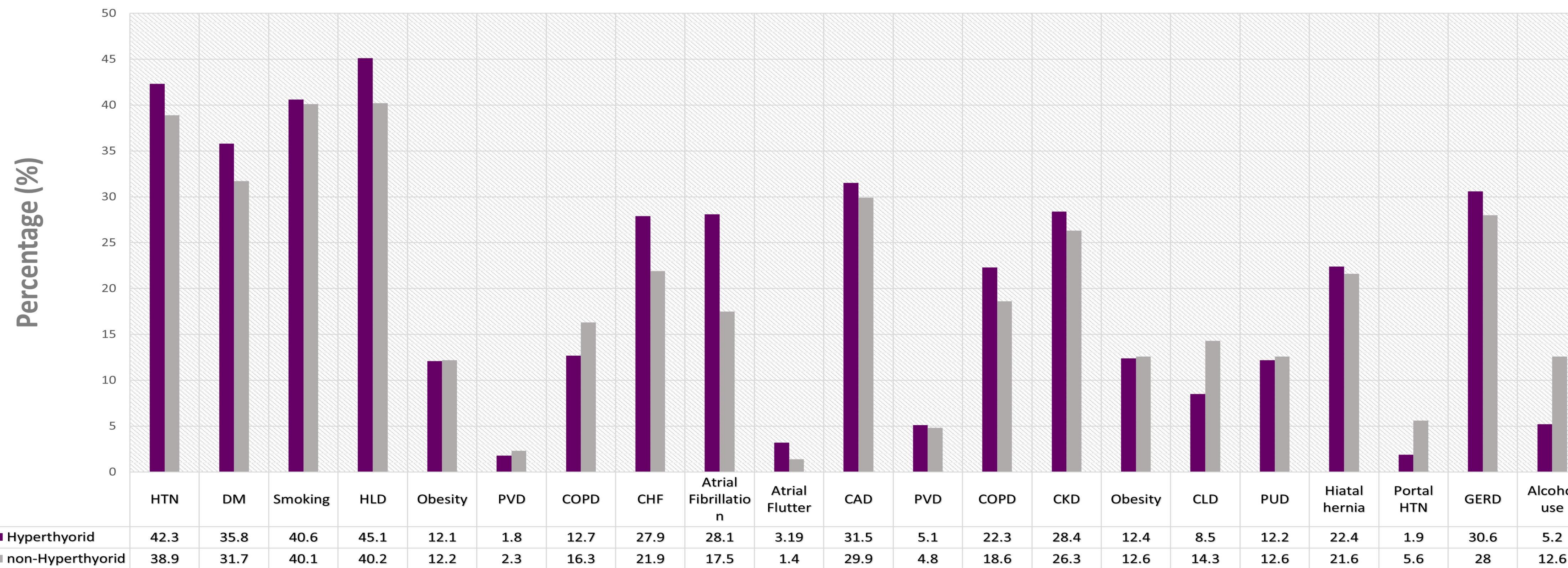
## Conclusion

Interestingly, our analysis concludes that hyperthyroid state can influence the mortality of patient with non-variceal UGIB. This beneficial effect is likely related to the modulatory effect of thyroid hormones on the responsiveness of the gastrointestinal mucosa to stress. Further studies are needed to investigate and confirm the clinical impact of thyroid state on the outcomes of patients with gastrointestinal bleeding.

## Contact

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Baseline comorbidities of NVUGIB patients stratified by Hyperthyroidism



(HTN=Hypertension, DM= Diabetes mellitus, HLD=Hyperlipidemia, CHF=Congestive heart failure, CAD=Coronary artery disease, PVD=Peripheral vascular disease, COPD=Chronic obstructive pulmonary disease, CKD=Chronic kidney disease, CLD= Chronic liver disease, P

Forest plot of study outcomes

