Post-endoscopic retrograde cholangiopancreatography (ERCP) pancreatitis: Analysis of demographics and associated co-morbid conditions

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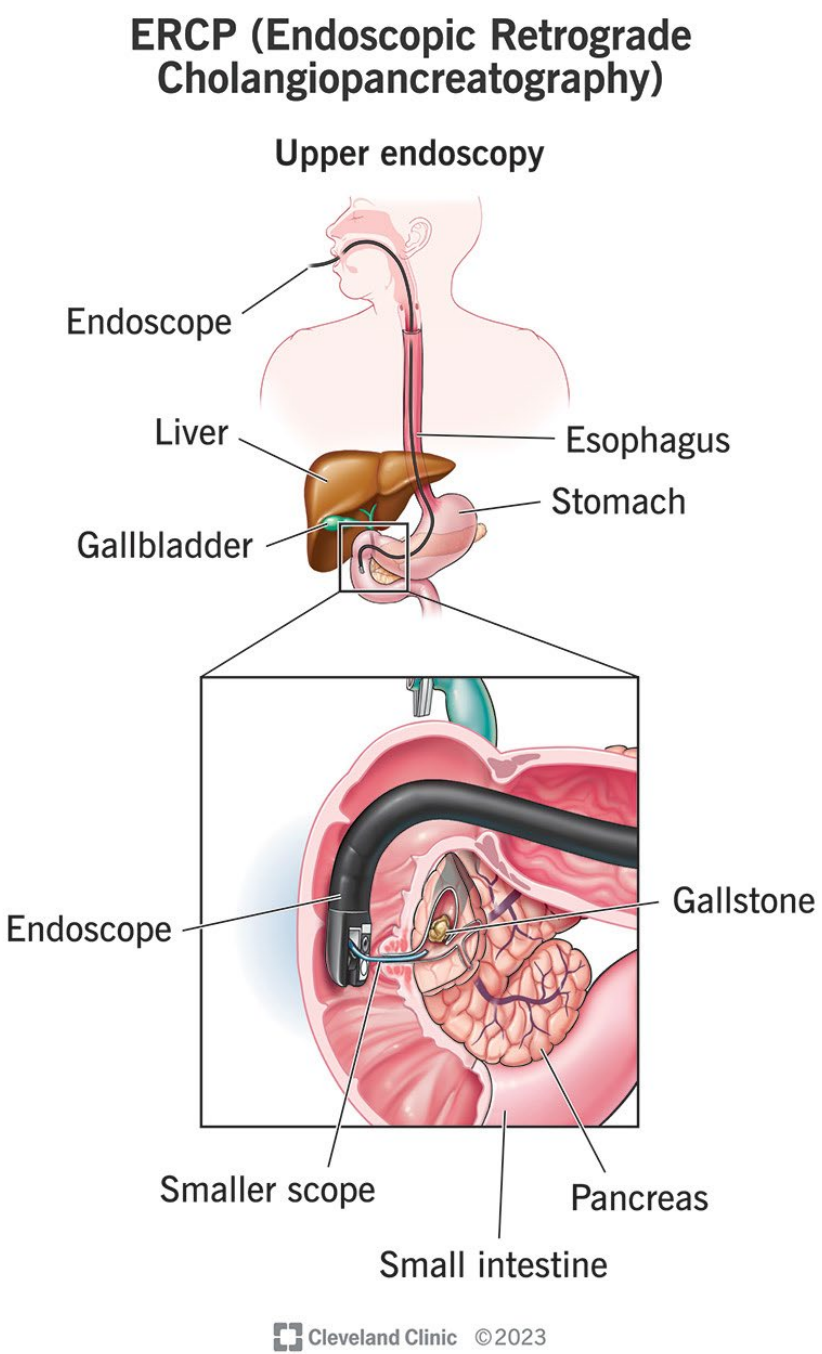
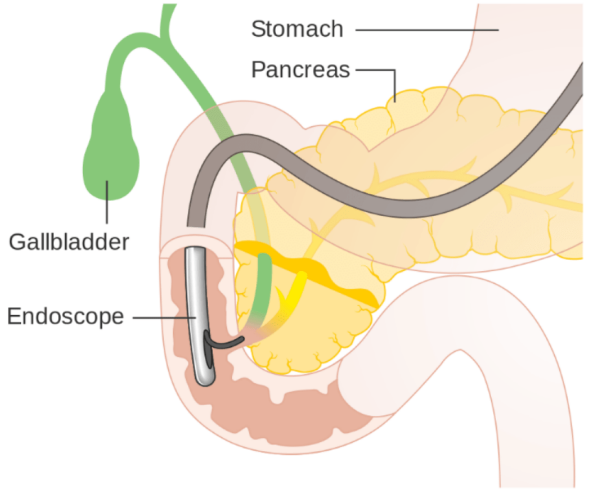


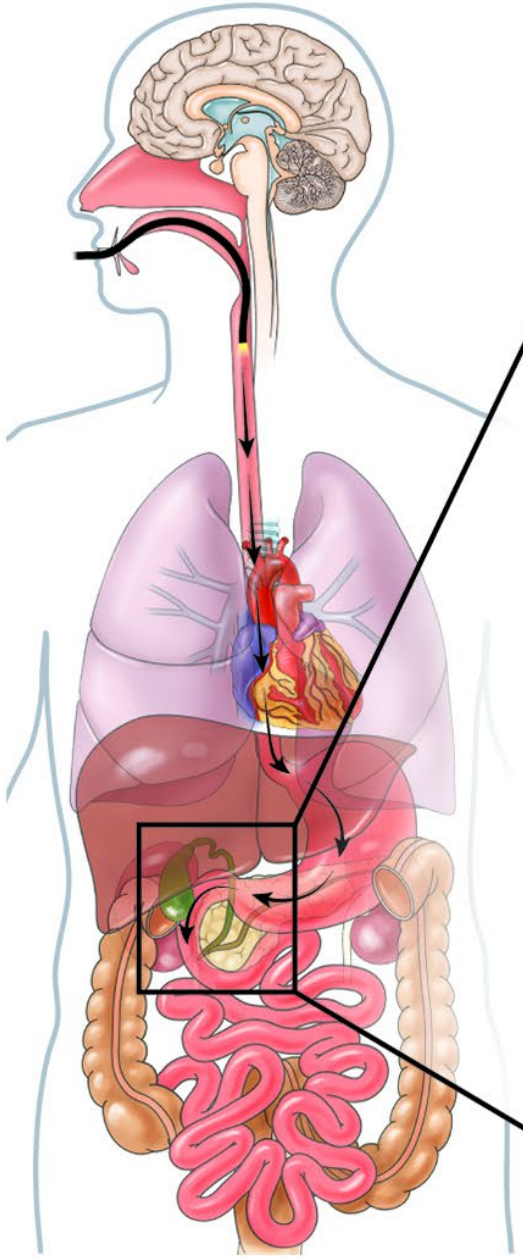
Background

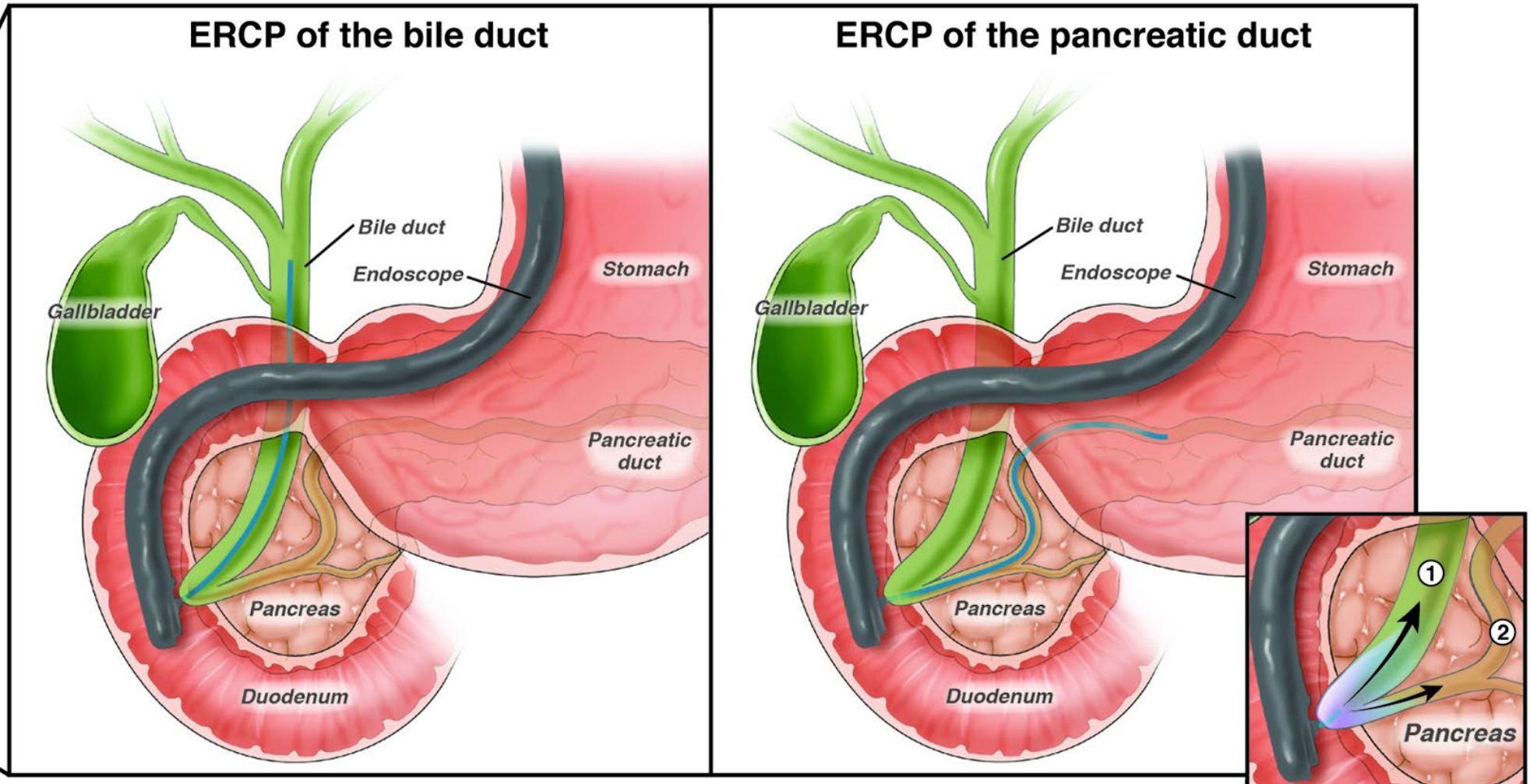
- Indications of ERCP:
  - Symptomatic pancreatic duct stones.
  - Symptomatic strictures accompanying chronic pancreatitis.
  - Recurrent acute pancreatitis of unknown etiology.
  - Symptomatic pancreatic pseudocysts of pancreatic fluid collections
- Most common indications: choledocholithiasis and cholestasis
- Complications following ERCP can range from minor to severe. The complexity of the procedure can increase the risk of complications.
  - Common complications include pancreatitis, which occurs in up to 5% of cases, as well as bleeding, perforation, and infection.



Ahmed A, Zuchelli T. Anatomy, Abdomen and Pelvis, Sphincter of Oddi (Hepatopancreatic Sphincter) [Updated 2023 Jul 4]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024 Jan-. [Figure, Diagrammatic representation of endoscopic retrograde...] Available from: https://www.ncbi.nlm.nih.gov/books/NBK551515/figure/article-29288.image.f3/

Patient undergoing ERCP





Dye injected into the bile duct (1) or pancreatic duct (2)

https://patient.gastro.org/endoscopic-retrograde-cholangiopancreatography-ercp/

Aims

- Understanding and effectively managing these complications are crucial for optimizing patient safety and procedural outcomes.
- ERCP-induced pancreatitis is the most common complication, occurring in ~3-15% of procedures.
- This study aims to assess if specific factors including age, gender, race, and presence of comorbidities influence the risk for developing post-ERCP pancreatitis in the US population.

Methods

- The data was sourced from the National Inpatient Sample (NIS) database for the years 2016 to 2020.
- Hospitalization requiring inpatient ERCP were identified using ICD-10 CM codes.
- Patients were cohorted based on the development of pancreatitis. Patients with pancreatitis secondary to other known etiologies were excluded.
- Descriptive statistics were conducted using the Chi-square test and Student's t-test. Multivariate linear and logistic regression models were built to identify predictors of post-ERCP pancreatitis.

Results

- Out of 827,115 patients who underwent ERCP during the study period, 67,975 developed pancreatitis.

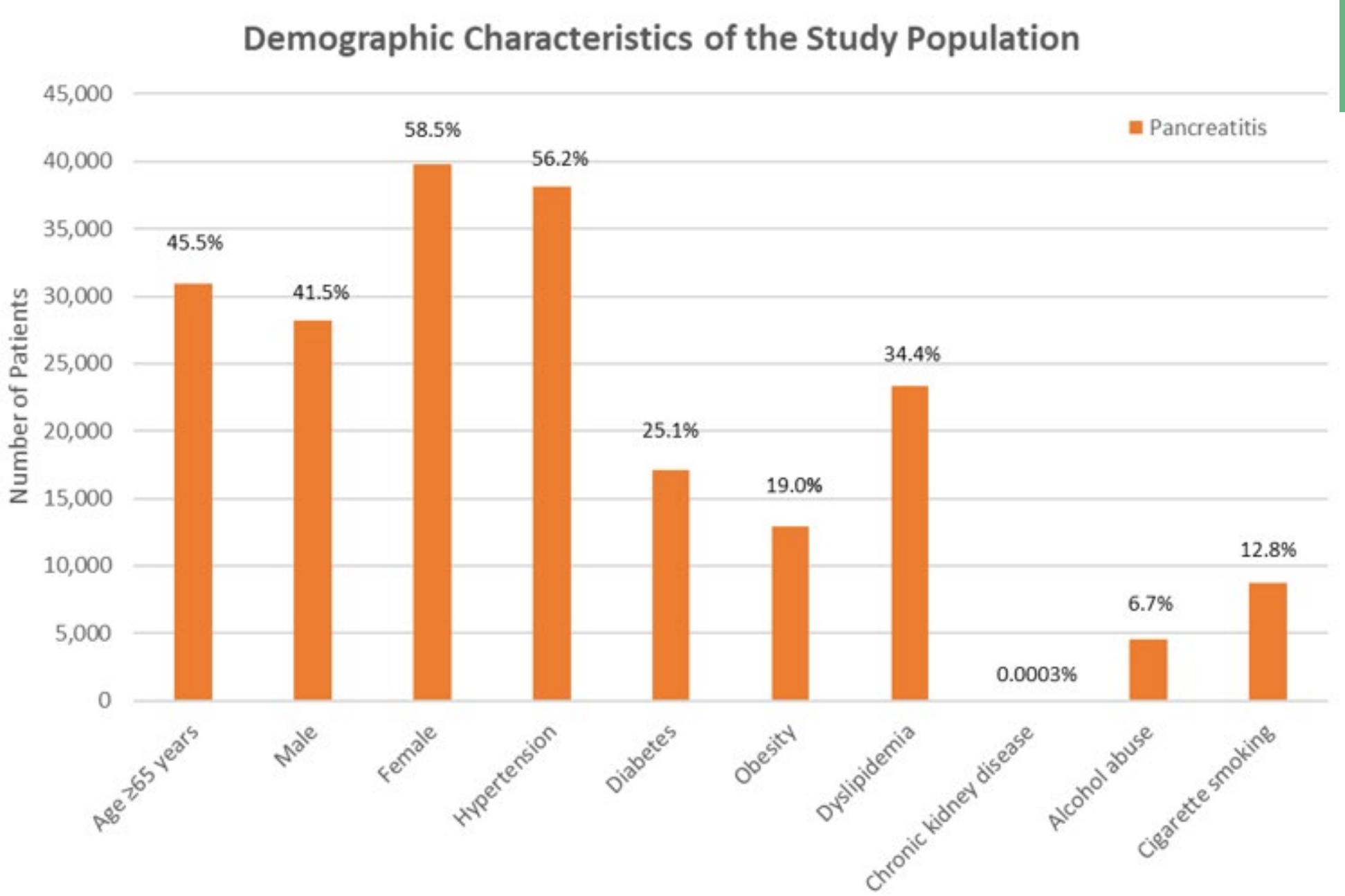
Variables	aOR	95% CI	p-value
Gender			
Male	Reference		
Female	1.12	1.09-1.13	0.000
Age ≥65 years	0.73	0.71-0.74	0.000
Race			
White	Reference		
Black	0.97	0.93-0.99	0.019
Hispanic	0.91	0.89-0.93	0.000
Asian or Pacific Islander	0.97	0.93-1.01	0.145
Native American	0.91	0.87-0.95	0.000
HTN	1.07	1.05-1.09	0.000
DM	1.00	0.98-1.02	0.932
Obesity	0.91	0.89-0.93	0.000
Dyslipidemia	1.16	1.13-1.18	0.000
CKD	0.95	0.63-1.42	0.805
Alcohol abuse	1.37	1.32-1.42	0.000
Cigarette smoking	1.12	1.09-1.14	0.000

aOR, adjusted odds ratio; CI, confidence interval

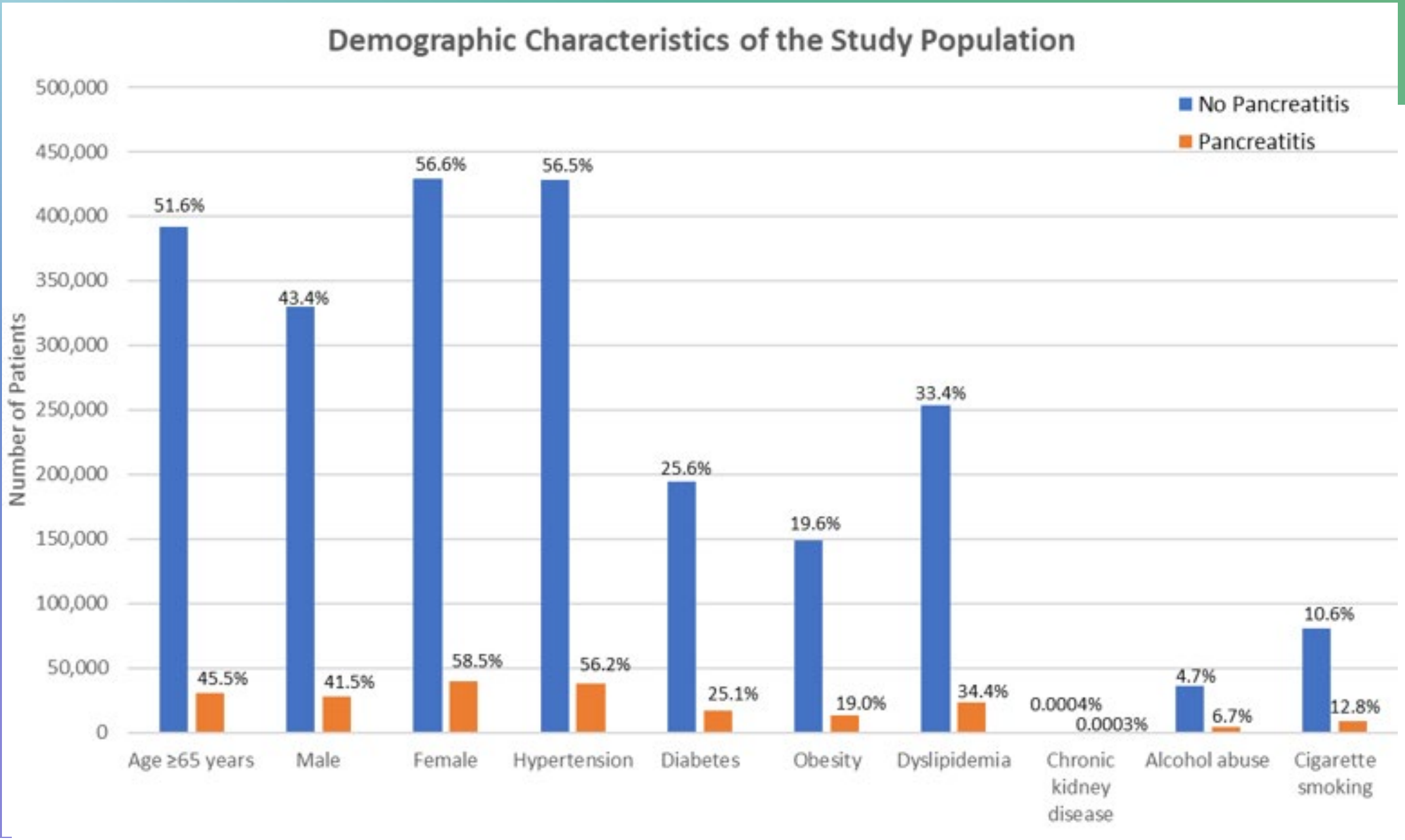
Fig. 1: Female gender, aged less than 65 years, and history of hypertension, dyslipidemia, alcohol or smoking abuse carried a significantly higher risk of post-ERCP pancreatitis.

Key findings

- Patients who developed pancreatitis were relatively younger.
- Female gender, hypertension, dyslipidemia, alcohol abuse, and smoking were associated with significantly higher odds of pancreatitis following ERCP.
- Race-specific odds ratios revealed differences among ethnic groups.
- Age over 65 years, African American, Hispanic and Native American races (compared to Caucasians), as well as obesity were associated with lower odds of pancreatitis associated with ERCP.



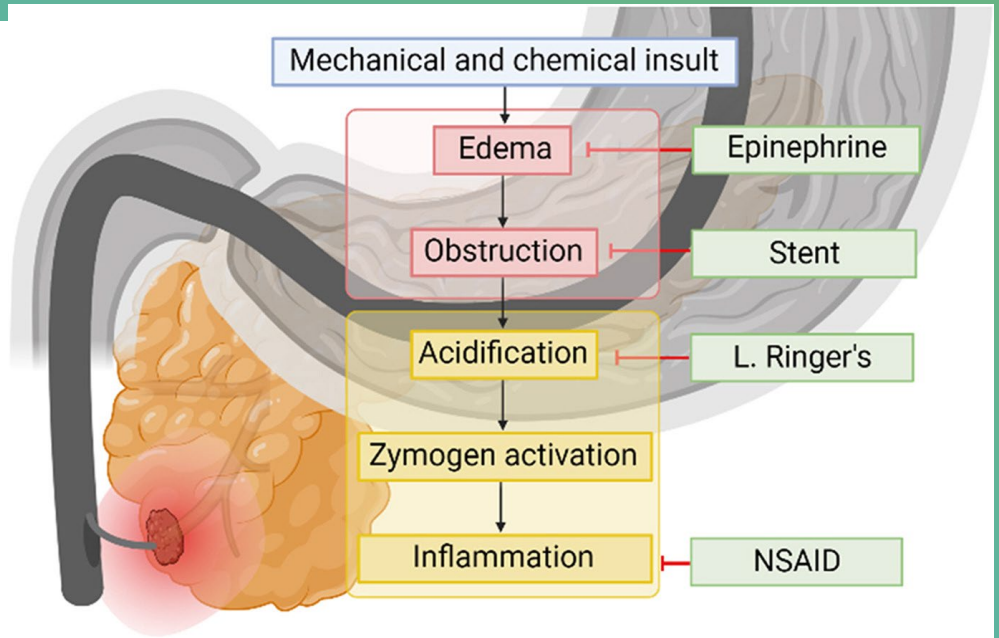
Graph 1: Patients who developed pancreatitis were relatively younger, with a higher predominance of females, Caucasians and African Americans.



Graph 2: Differences among different demographic characteristics of the two cohorts in the study population.

Discussion

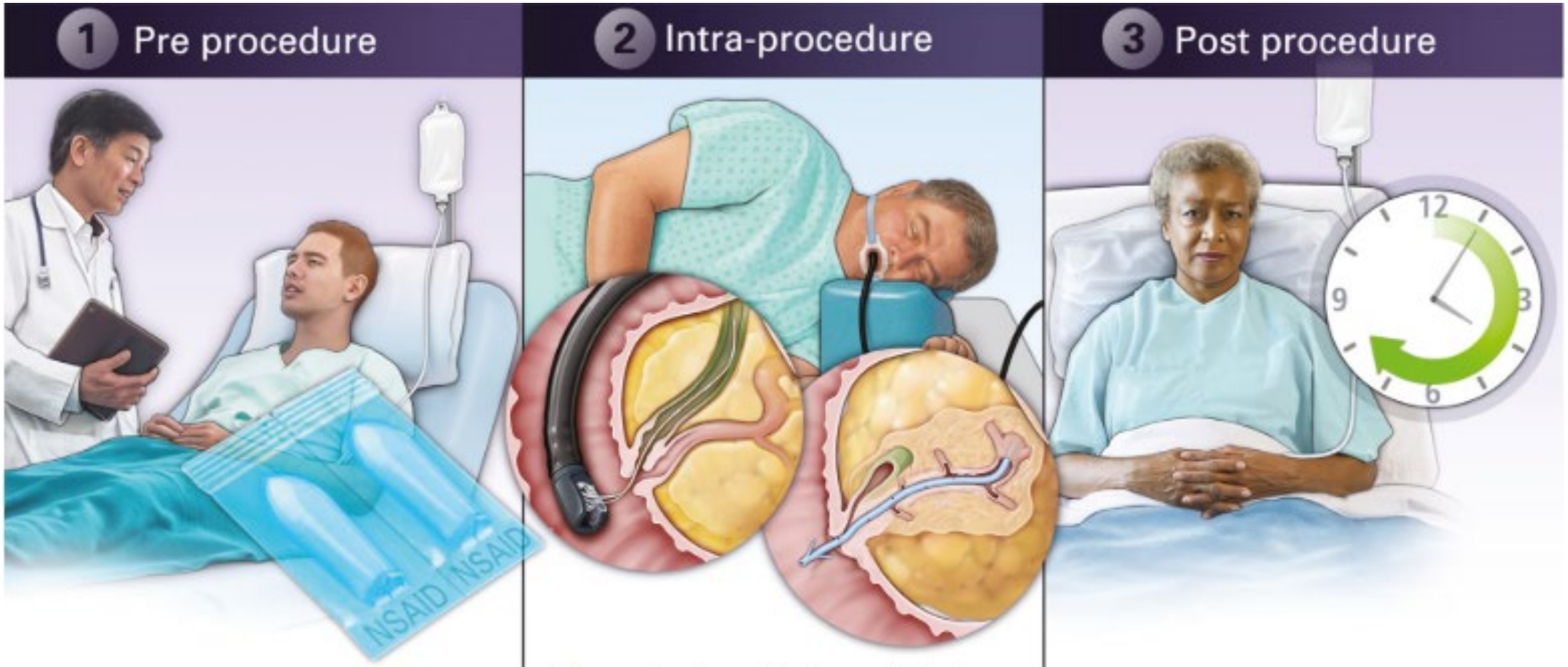
- These results correspond with those from large retrospective cohorts from several European countries and underscore the importance of considering patient demographics and comorbidities in ERCP risk assessment.
- Pancreatitis after ERCP may result from mechanical injury, which might involve extensive duct manipulation, contrast medium injections, or cannulation challenges.



Combined use of indomethacin and hydration is the best conservative approach for post-ERCP pancreatitis prevention: A network meta-analysis, Pancreatology. (n.d.). *Science Direct*. https://www.sciencedirect.com/science/article/pii/S1424390321004993

+ Comprehensive preventive strategies should be implemented and investigated further to reduce the incidence of post-ERCP pancreatitis and enhance patient safety during the procedure.
+ Our findings underscore the importance of considering patient demographics and comorbidities in ERCP risk assessment.

American Society of Gastrointestinal Endoscopy (ASGE) recommendations



- Recommend preprocedural rectal NSAIDs to prevent post ERCP pancreatitis

- Suggests wire guided cannulation to contrast guided cannulation to minimize the risk post ERCP pancreatitis
- Recommend pancreatic stents be used to prevent post ERCP pancreatitis in high-risk patients

- Suggests aggressive peri and post-procedural intravenous hydration to prevent post ERCP pancreatitis

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