STUDY OF CORRELATION OF SMOKING IN CAUSATION,SEVERITY AND PROGNOSIS OF ACUTE PANCREATITIS

ABSTRACT

Acute pancreatitis (AP) is a common and potentially severe inflammatory condition of the pancreas. While gallstones and alcohol use are recognized risk factors, emerging evidence suggests that cigarette smoking may also play a significant role in its pathogenesis. This study explores the correlation between smoking and the development and progression of acute pancreatitis. Findings indicate that smoking is associated with an increased risk and greater severity of AP, independent of other contributing factors. These insights underscore the need to consider smoking as a modifiable risk factor in both the prevention and clinical management of acute pancreatitis.

Objective: This study is done to:

1.calculate the APACHE II score for acute pancreatitis for disease severity at the time of admission and to calculate ransons score for the prognosis of the patient

2.determine type of smoker(former,current,non smoker)

a)former smoker-person who has quit smoking 6 or more months back

b)current smoker-person who is smoking in the present

c)non smoker- person who has not smoked ever in his/her life

3.find out the relationship, if any, between the type of smoking and the severity of acute pancreatitis

Methods: This hospital based retrospective open case study includes patients admitted to a tertiary care hospital at Navi Mumbai from

September 2024 to April 2025. Due clearance was taken for the study from the ethics committee of the medical college. The patients admitted from OPD or emergency room were explained about their involvement in the study and due consent was taken. The on-call surgery team did the initial assessment and resuscitation. Patients were then shifted to wards or surgical ICU based on their condition on admission. A complete blood profile and radiological assessments were done. Patients' progress was monitored from the time of admission till discharge. The APACHE II scoring system was used to determine the severity of acute pancreatitis along with CT findings. (Balthazar CT severity score). Ranson's score was used at the time of admission and then 48 hours later to see the prognosis of the disease. A detailed questionnaire was made to determine the type of smoker(current/former/nonsmoker). A correlation was made to establish between the severity of acute pancreatitis and their smoking status.

Results: In our study of 50 patients, 28 patients were current smokers,17 patients were former smokers and 5 patients were non-smokers. APACHE II score was calculated at the time of admission and in 18 patients CECT(A+P) was done, for which Balthazar CT severity scoring was done to assess the severity of acute pancreatitis. To determine the prognosis of the disease, the Ransons scoring system was calculated at the time of admission as well as 48 hours later.w

In our study, the APACHE II scoring system showed higher severity for age, but not higher severity for smoking type indicating no correlation between smoking and severity of acute pancreatitis and prognosis.

Conclusion: This study underscores the importance of early diagnosis, conservative management, and accounting for confounders in acute pancreatitis, with most patients achieving good outcomes.

INTRODUCTION

MATERIALS AND METHODS

Study Design –

This retrospective study was conducted in our tertiary care hospital over a period of 8 months from the month of September 2024 to the month of April 2025.

Study Population

All patients who presented to the surgical outpatient department and emergency room with acute abdomen which was later diagnosed as acute pancreatitis. Male and female patients were included in this study. Age restrictions were not imposed.

Data Collection

The medical records of the eligible patients were reviewed, and data were extracted using a standardized collection form. The following parameters were collected.

1. Demographics: Age, sex, residence (rural/urban), personal history including diet and addictions, previous similar complaints

2. Clinical presentation: Chief complaints, duration of symptoms, and physical examination findings

3. Diagnostic investigations: Ultrasonography, Blood samples, chest, CT SCAN of abdomen and pelvis

4. Management details: Initial Resuscitation, Conservative measures, medical therapy, physiotherapy & rehabilitation

5. Follow-up outcomes: Symptom resolution, recurrence, complications, and patient satisfaction

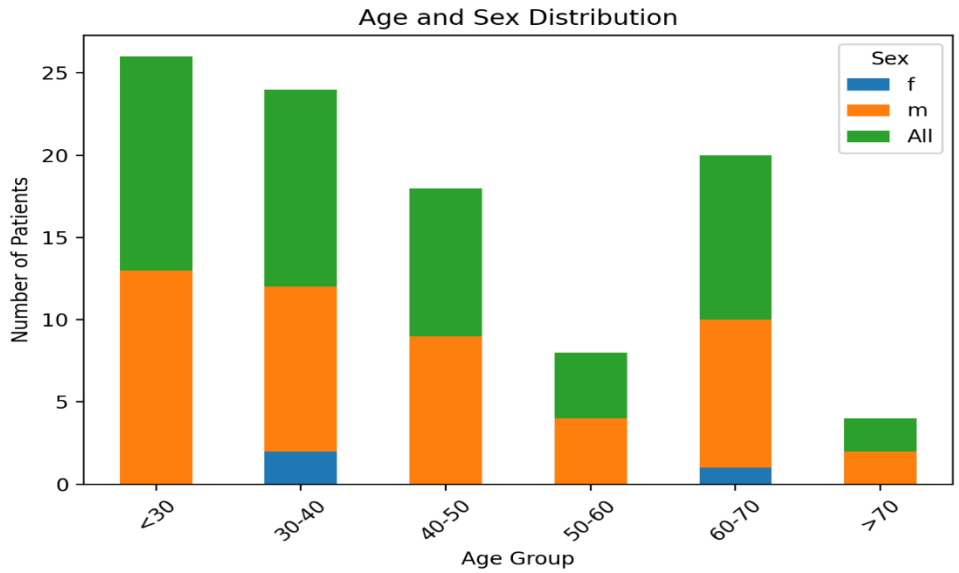
Statistical Analysis

The collected data were coded, entered, and analyzed using the appropriate statistical software. Descriptive statistics were used to determine and analyze types of smokers and their relationship to prognosis and severity in patients with acute pancreatitis. Categorical variables are expressed as frequencies and percentages, while continuous variables are presented as means with standard deviations or medians with interquartile ranges based on the distribution pattern..

RESULTS

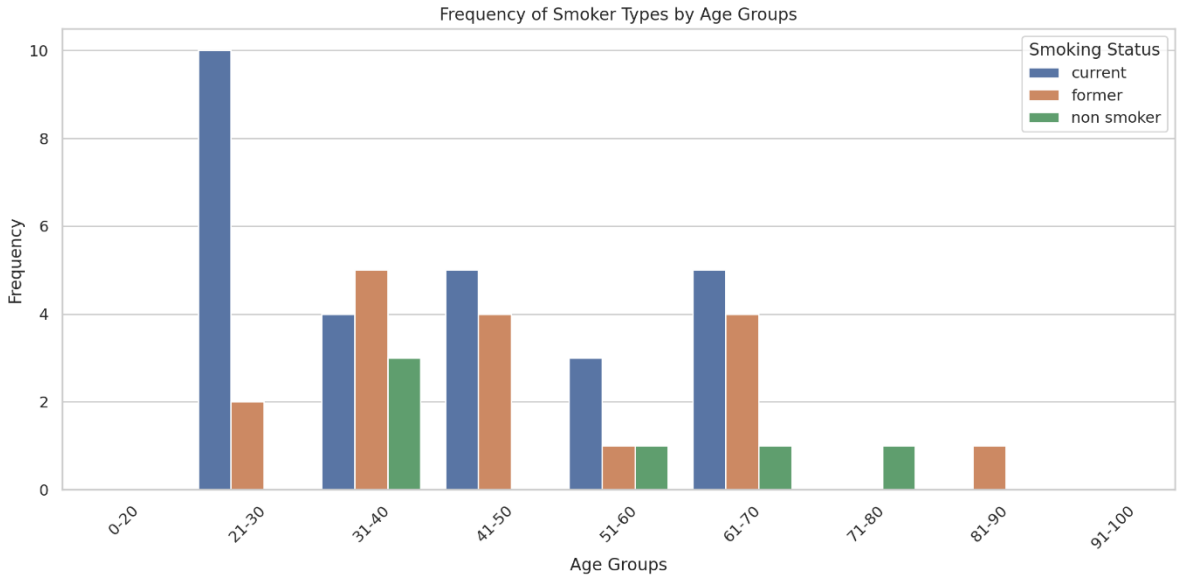
Demographic Characteristics

- A total of 50 patients with acute pancreatitis were analysed during the 8 month study period.Among these there was strong male predominance (94% male patients)Age wise largest age groups being <30 (26%) and 30-40 (24%),Very few patients >60 years old (24%) with strong male predominance (94% male patients),largest age groups being <30 (26%) and 30-40 (24%).



- f-Female
- m-Male

	f	m	All
<30	0	13	13
30-40	2	10	12
40-50	0	9	9
50-60	0	4	4
60-70	1	9	10
>70	0	2	2
All	3	47	50



Here are some key observations from the graph:

1. **Current Smokers**: The age group of 21-30 has the highest frequency of current smokers, indicating that this demographic is more likely to smoke compared to other age groups. The frequency decreases in older age groups.
2. **Former Smokers**: The 21-30 age group also shows a notable number of former smokers, suggesting that many individuals in this age range may have quit smoking. The frequency of former smokers decreases significantly in older age groups.
3. **Non-Smokers**: The non-smoking category shows a relatively consistent frequency across age groups, with a slight increase in the younger age brackets. This could indicate a trend of reduced smoking initiation among younger individuals.

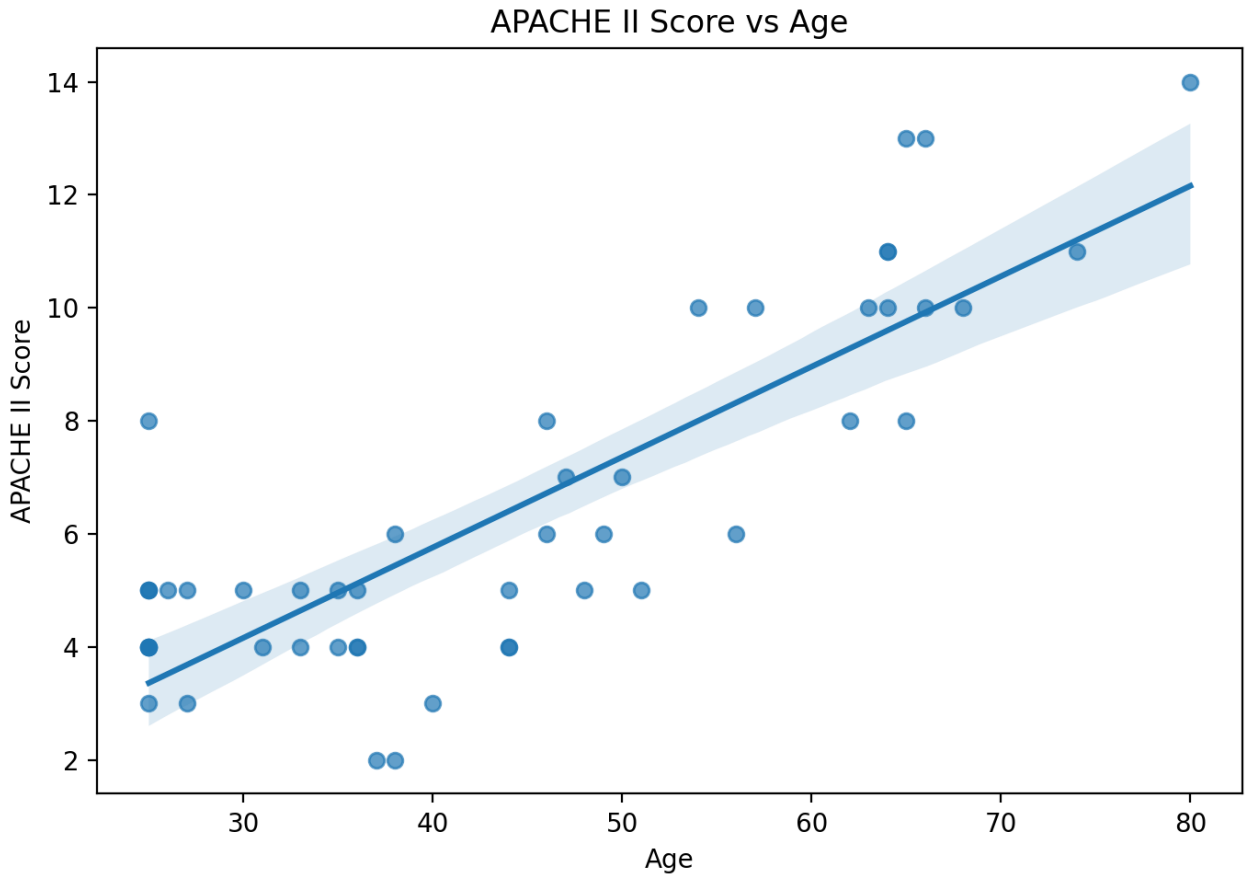
Clinical Presentation

The most common presenting complaint was acute pain in abdomen radiating to back, reported by 45 patients (90%), followed by vomiting/nausea in 40 patients (80%) and fever in 25 patients (50%) Some patients present with multiple symptoms. The duration of symptoms ranges from a couple of hours to couple of weeks.

Table 2: Clinical Presentation of acute pancreatitis

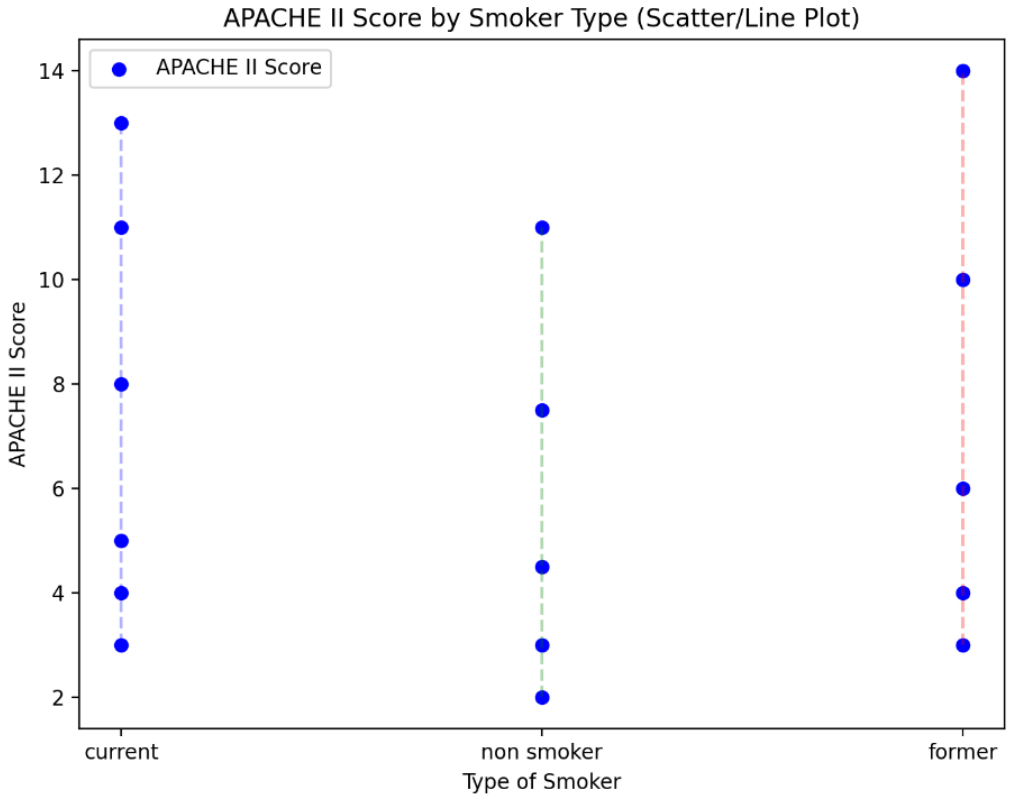
Clinical Feature	Number of Cases	Percentage (%)
Epigastric pain	45	90
Vomiting / nausea	40	80
fever	25	50

APASCHE II scoring and age



- **Strong positive correlation between age and APACHE II scores (r=0.83, p<0.001), indicating disease severity tends to increase with age**

APASCHE II scoring and smoking



The analysis shows:

- **Former smokers have the highest mean APACHE II score (7.18, CI: 5.39-8.96)**
- **Current smokers follow (6.15, CI: 5.10-7.20)**
- **Non-smokers have the lowest score (5.33, CI: 1.60-9.07)**

Diagnostic Approaches

All patients underwent thorough clinical examination, followed by selective diagnostic investigations based on clinical presentation and suspicion. Ultrasonography was performed in 50 patients (100%), CECT was performed at 48 hrs from admission in 32 patients (64%). MRCP was performed in 5 patients (10 %) in whom common bile duct and pancreatic duct obstruction pathology was suspected.

Table 3: Diagnostic Modalities Utilized

Diagnostic Modality	Number of Cases	Percentage (%)
Clinical Examination	50	100.0
Ultrasonography	50	100
CECT AP	32	64
MRCP	5	10

Management Strategies

The management approach varies based on the diagnosis, severity of symptoms, patient preferences, and risk assessment. Conservative management was employed in 50 patients (100%). Conservative therapy included medical management with Analgesics, anti-emetics, PPI therapy, chest physiotherapy, spirometry, early mobilisation and early initiation of enteral feeding.10 out of 50 patient were admitted to Surgical ICU as they had signs of MODS. 21 out of 50 were Admitted in Surgical HDU in whom deterioration was suspected. 19 were admitted directly to wards who were clinically and pathologically stable.

Correlation of Clinical and radiological diagnosis

The accuracy of the clinical diagnosis compared with the radiological diagnosis was analysed. The overall sensitivity of clinical diagnosis was 80%. Sonography was the diagnostic modality of choice on admission followed by CT scan at 48 hrs from admission.

Acute oedematous pancreatitis was present in 30 out of 50 cases and acute necrotising pancreatitis was present in 20 cases out of 50.

Table 4:: Sensitivity of Clinical Diagnosis in Correlation with radiology

Diagnosis	Clinical Diagnosis	Final radiological Diagnosis	Difference	Sensitivity (%)
Acute pancreatitis	40	50	10	80
Total	50	50	-	-

Follow-up Outcomes

Follow-up data were available for 20 patients (40%) with a mean follow-up duration of 4.2 ± 1.8 months. Among the patients with acute oedematous pancreatitis, 15 (30%) reported complete symptomatic relief, while 2 (4%) showed mild symptoms which were intermittent requiring additional interventions like EUS and pseudocyst formation which required drainage due to compression symptoms or required cystogastrostomy for quality-of-life improvement.

DISCUSSION

This study analyzed 50 patients with acute pancreatitis over eight months, revealing key demographic, clinical, and management trends. The strong male predominance (94%) aligns with global patterns, where alcohol-related pancreatitis is more common among men [8]. The largest affected age groups were under 30 (26%) and 30–40 years (24%), matching epidemiological data indicating younger adults are increasingly affected due to alcohol and gallstone-related causes [6].

Smoking status showed notable trends: the 21–30 age group had the highest proportion of current and former smokers. Interestingly, former smokers had the highest mean APACHE II scores (7.18), followed by current smokers (6.15), suggesting a correlation between smoking history and increased disease severity. Prior studies confirm that smoking is an independent risk factor for both the development and exacerbation of pancreatitis [1].

Clinically, abdominal pain radiating to the back was the most common symptom (90%), consistent with classical descriptions [2]. Diagnostic approaches followed standard protocols, with universal ultrasonography and selective contrast-enhanced CT, matching American College of Gastroenterology guidelines [6]. Management was primarily conservative (100%), with ICU or HDU admissions determined by disease severity, which aligns with current care models [3].

An important consideration is the role of **confounding factors**, which can distort observed associations. For example, alcohol use is often coexistent with smoking and may confound the relationship between smoking and pancreatitis severity [5]. Age is another confounder, as older patients may inherently have higher APACHE II scores due to comorbidities, independent of pancreatitis [4]. Without adjusting for such factors, the observed correlations between smoking or age and disease severity may be over- or underestimated.

The study’s clinical diagnostic sensitivity (80%) highlights the ongoing need for radiological confirmation, especially to distinguish

oedematous from necrotising pancreatitis. Follow-up showed good outcomes in most oedematous cases, though some developed complications like pseudocysts, consistent with known risks [7].

CONCLUSION

In conclusion, this study highlights key demographic patterns, clinical features, and management strategies in acute pancreatitis, emphasizing the importance of early diagnosis and conservative care. The observed correlations between smoking, age, and disease severity underline the need to consider potential confounding factors like alcohol use and comorbidities. Radiological confirmation remains crucial for accurate diagnosis and treatment planning. Overall, most patients showed favorable outcomes, though some developed complications requiring further intervention.

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