Pancreatitis in Clinical Practice: An Observational Study of Risk Factors, Clinical Characteristics, and Medication Utilization

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Abstract

Background: Pancreatitis is an inflammatory disorder of the pancreas and a significant cause of hospital admissions worldwide. The incidence of pancreatitis has increased due to lifestyle-related factors such as alcohol consumption, smoking, and metabolic disorders.

Objective: To assess the risk factors, clinical characteristics, laboratory findings, drug utilization patterns, and treatment outcomes among patients diagnosed with pancreatitis.

Methodology: A prospective observational study was conducted over a period of six months in a tertiary care hospital. A total of 120 patients diagnosed with pancreatitis were included. Data regarding demographics, risk factors, clinical presentation, laboratory investigations, prescribed medications, and treatment outcomes were collected from patient records and analysed using appropriate statistical methods.

Results: The majority of patients were males aged 18–40 years. Alcohol consumption was identified as the predominant risk factor, followed by smoking, diabetes mellitus, and hypertension. Acute pancreatitis was more commonly observed than chronic pancreatitis. The most frequent clinical manifestations included abdominal pain, nausea, vomiting, and abdominal tenderness. Elevated levels of C-reactive protein (CRP), amylase, and lipase were observed in a substantial proportion of patients. Drug therapy mainly consisted of paracetamol, tramadol, ondansetron, pantoprazole, and ceftriaxone when indicated. Most patients showed symptomatic improvement during hospitalization, while some achieved complete recovery and others required further management. Treatment outcomes were significantly associated with age, risk factors, clinical features, and laboratory parameters.

Conclusion: Alcohol consumption remains the leading risk factor for pancreatitis. Early diagnosis, appropriate drug utilization, and modification of lifestyle-related risk factors are crucial for improving clinical outcomes and reducing disease-related complications.

Introduction

Pancreatitis is an inflammatory disorder of the pancreas that represents a significant cause of gastrointestinal morbidity and hospital admissions worldwide. It occurs in two major forms: acute pancreatitis (AP), characterized by sudden inflammation of the pancreas, and chronic pancreatitis (CP), which involves progressive and irreversible pancreatic damage leading to impairment of both exocrine and endocrine functions. Although the majority of patients with acute pancreatitis recover with appropriate supportive care, severe cases may result in local and systemic complications, multiple organ dysfunction, prolonged hospitalization, and increased mortality[1,2].

The global incidence of pancreatitis has shown a rising trend over the past few decades, largely attributable to changes in lifestyle, increasing alcohol consumption, smoking, obesity, gallstone disease, hypertriglyceridemia, and diabetes mellitus. Alcohol abuse and gallstone disease remain the leading etiological factors, accounting for the majority of cases, while metabolic disorders, certain medications, infections, trauma, and genetic abnormalities contribute to a smaller proportion of cases. Early identification and modification of these risk factors play a crucial role in preventing disease progression, recurrence, and long-term complications[2,3].

Clinically, pancreatitis commonly presents with severe epigastric abdominal pain radiating to the back, accompanied by nausea, vomiting, abdominal tenderness, and fever[4,5,6]. Diagnosis is established based on characteristic clinical features, elevated pancreatic enzymes such as serum amylase and lipase, and radiological imaging when indicated. Inflammatory markers, including C-reactive protein (CRP), along with biochemical investigations, are valuable in assessing disease severity and predicting clinical outcomes[7]. Prompt diagnosis and risk stratification are essential to initiate timely management and reduce morbidity.

The management of pancreatitis is primarily supportive and includes adequate fluid resuscitation, pain control, nutritional support, correction of electrolyte imbalances, and treatment of the underlying cause[8]. Pharmacological therapy commonly involves analgesics, antiemetics, proton pump inhibitors, antibiotics when infection is suspected or confirmed, and other medications based on the patient's clinical condition and associated comorbidities. Evaluation of drug utilization patterns is important to ensure rational prescribing practices, optimize therapeutic outcomes, minimize adverse drug reactions, and promote evidence-based patient care[8,9].

Despite advances in diagnostic techniques and therapeutic interventions, pancreatitis continues to impose a considerable burden on healthcare systems due to recurrent hospitalizations, complications, and increased healthcare costs. Understanding the demographic profile, clinical characteristics, laboratory findings, risk factors, and treatment patterns among patients with pancreatitis is essential for improving disease management and developing preventive strategies[3,10,11]. The assessing treatment outcomes helps identify factors associated with recovery and guides clinicians in optimizing patient care. The present prospective observational study was undertaken in a tertiary care hospital to evaluate the risk factors, clinical characteristics, laboratory findings, drug utilization patterns, and treatment outcomes among patients diagnosed with pancreatitis[12,13,14]. The findings of this study are expected to provide valuable insights into the epidemiology and management of pancreatitis and contribute to improving the quality of clinical care through evidence-based therapeutic practices.

Methodology

A prospective observational study was conducted over a period of six months (October 2025 to March 2026) in the Departments of General Medicine, General Surgery, and Pediatrics at Sri Venkateswara Ramnarayana Ruia Government General Hospital (SVRRGGH), Tirupati, Andhra Pradesh. A total of 120 patients diagnosed with acute or chronic pancreatitis were enrolled in the study. Patients of all age groups who were admitted during the study period, fulfilled the inclusion criteria, and provided written informed consent were included. Patients with complete medical records, including laboratory investigations and prescription details, were eligible for participation. Pregnant and lactating women, patients who refused to participate, and those who were terminally ill or unable to communicate were excluded from the study.

Data were collected using a predesigned and validated patient data collection form through direct patient interviews and review of medical records. Information regarding demographic characteristics, risk factors, clinical presentation, laboratory and imaging findings, prescribed medications, duration of hospital stay, and treatment outcomes was recorded systematically. The study protocol was approved by the Institutional Ethics Committee of Sri Padmavathi School of Pharmacy (IEC No. SPSP/2025-2026/PHD10). Written informed consent was obtained from all participants before enrolment, and confidentiality of patient information was maintained throughout the study. The collected data were entered into Microsoft Excel and analysed using appropriate statistical software. Descriptive statistics, including frequencies, percentages, and mean values, were used to summarize the data. The findings were presented using tables and graphs.

Results

A total of 120 patients diagnosed with pancreatitis were included in this prospective observational study. The collected data were analysed to evaluate the demographic characteristics, risk factors, clinical presentation, laboratory findings, drug utilization patterns, and treatment outcomes. The results are presented below. The age-wise distribution of the study population. Among the 120 patients, the majority belonged to the 18–40 years age group (66, 55.0%), followed by the 40–60 years age group (38, 31.7%). Patients aged >60 years accounted for 12 (10.0%) cases, while only 4 (3.3%) patients were younger than 18 years. These findings indicate that pancreatitis was more prevalent among young and middle-aged adults.

The gender distribution of the study population. Among the 120 patients included in the study, the majority were males (96, 80.0%), while females accounted for 24 (20.0%) patients. These findings indicate a marked male predominance among patients diagnosed with pancreatitis.

The distribution of risk factors among patients with pancreatitis. Alcohol consumption was the most common risk factor, reported in 113 (94.17%) patients. Other frequently identified risk factors included diabetes mellitus in 43 (35.83%) patients, hypertension in 40 (33.33%), and smoking/tobacco use in 29 (24.17%). Gallstone disease was observed in 16 (13.33%) patients, whereas abdominal trauma and hypertriglyceridemia were the least common risk factors, each reported in 2 (1.67%) patients. These findings suggest that alcohol consumption was the predominant risk factor associated with pancreatitis in the study population.

Depicts the distribution of patients according to the number of identified risk factors. A single risk factor was observed in 43 (35.83%) patients, making it the most common category. Two risk factors were present in 36 (30.00%) patients, while 31 (25.83%) patients had three risk factors. Only 10 (8.33%) patients had four risk factors. These findings indicate that the majority of patients had one or two identifiable risk factors associated with pancreatitis.

Among 120 patients were classified based on the number of risk factors they had. Most patients had one risk factor (35.83%). Some patients had two risk factors (30%), and 25.83% had three risk factors. Only a small number (8.33%) had four risk factors. In this study, all patients (100%) experienced abdominal pain, making it the most common symptom of pancreatitis. Many patients also had nausea and vomiting (85%) and abdominal tenderness (63.33%), while some showed fever (39.17%). Other symptoms like digestive problems (18.33%), abdominal bloating (13.33%), headache (10%), and jaundice (9.17%) were seen in fewer patients. Only a small number had constipation (6.67%), diarrhoea (5%), or weight loss (1.67%).

Among the 120 patients, most showed 3 clinical features (33.33%), followed by 4 features (29.17%). Some patients had 2 features (19.17%) and 5 features (12.50%), while very few had 1, 6, or 7 features.

The figure 1 showed high CRP levels (100%), which indicates inflammation. Many patients also had raised amylase (79.17%) and lipase (76.67%), which are important markers of pancreatitis. A large number of patients had increased WBC count (70.83%), while some showed higher blood sugar (48.33%) and creatinine levels (45%). Only a few patients had elevated SGOT (23.33%) and SGPT (19.17%).

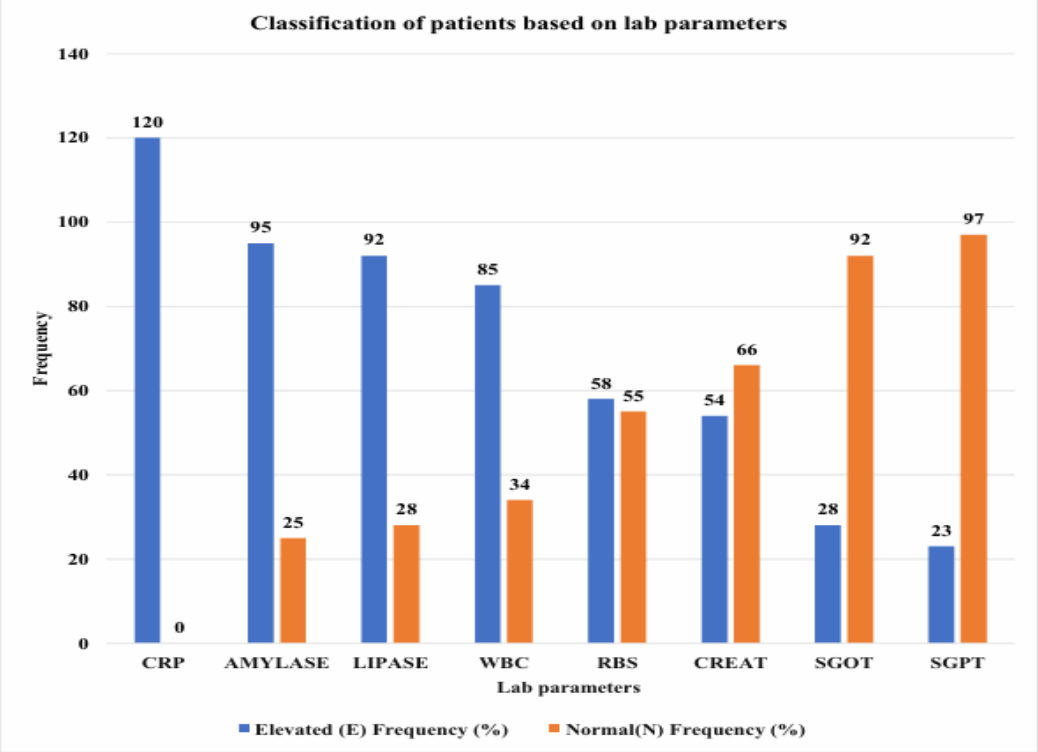

Figure 1 – Classification of patients based on lab parameters

The most were evaluated using ultrasonography (USG) (65%), while 35% of patients underwent CT scan. In study population most were diagnosed with acute pancreatitis (68.33%), while a smaller number of patients had chronic pancreatitis (31.67%). The most had a hospital stay of less than 7 days (46.67%). A similar number of patients stayed for 7–14 days (44.17S%), while only a few patients had a longer stay of more than 14 days (9.16%).

Table 1 Classification of patients based on drugs prescribed (N=120)

S.NO	CATEGORY	Drug	Frequency	Percentage (%)
1	ANTIBIOTICS	CEFTRIAXONE	61	50.83%
		AMOXICILLIN & CLAVULANATE POTASSIUM	30	25.00%
		METRINADAZOLE	14	11.67%
		PIPERICILLIN & TAZOBACTUM	7	5.83%
		MEROPENEM	8	6.67%
2	ANTI ULCERS	PANTOPRAZOLE	117	97.50%
		RANITIDINE	3	2.50%
3	ANALGESIC	TRAMADOL	114	95.00%
4	ANTI-SPASMODIC	DICYCLOMINE	6	5.00%
5	ANTIPYRETIC	PARACETAMOL	120	100.00%
6	VITAMIN SUPPLIMENTS	MULTI VITAMIN	53	44.17%
		VITAMIN A&D	11	9.17%
		B-COMPLEX	21	17.50%
		THIAMINE	35	29.17%
7	ANTIEMETIC	ONDANSETRON	120	100.00%

Among 120 patients, Paracetamol and Ondansetron were prescribed to all patients (100%). Pantoprazole (97.5%) and Tramadol (95%) were also highly utilized. Among antibiotics, Ceftriaxone (50.83%) was most common, followed by Amoxicillin & Clavulanate Potassium (25%). Supportive drugs like Multivitamin and Thiamine showed moderate use. The Ceftriaxone (50.83%) was the most commonly used drug. Other antibiotics such as Amoxicillin & potassium clavulanate (25%), Metronidazole (11.67%), Meropenem (6.67%), and Piperacillin + Tazobactam (5.83%) were used in fewer patients. In total study patients, most showed reduction in symptoms (55.83%) after treatment. Some patients were transferred (25.83%) for further care, while a smaller number achieved complete recovery (18.33%).

Table 2: Summary of Association between Variables and Treatment Outcome

S. No	Variable	Category	Improved n	Not Improved n	χ^2 value	Df	P-valu e
1	Risk Factors	Alcoholism	86	27	8.9	6	**0.01**

		Smoking/Tobacco use	19	10			**8**
		Gall stones	12	4			
		Diabetes	26	17			
		Hypertension	23	17			
		Abdominal trauma	1	1			
		Hypertriglyceridemia	0	2			
2	Gender	Male	69	27	1.22	1	0.26
		Female	20	4			
3	Age Group	<18 yrs	4	0	10.5	3	**0.01**
		18–40 yrs	55	11			**5**
		40–60 yrs	22	16			
		>60 yrs	8	4			
4	Clinical Presentations	Abdominal pain	90	30	5.7	7	**0.02**
		Nausea / vomiting	74	28			**5**
		Fever	35	12			
		Jaundice	9	2			
		Bloating / distension	46	14			
		Constipation	7	1			
		Diarrhea	4	2			
		Weight loss	2	0			
		Gi related problems	17	5			
		Headache	9	3			
		Tenderness	58	18			
5	No. of Symptoms	1	1	—	14.2	6	**0.02**
		2	18				**8**
		3	34				
		4	24				
		5	7				
		6	5				
		7	0				
6	Lab Values (Elevated)	LIPASE	70	22	2.6	5	**0.017**
		AMYLASE	72	23			
		WBC	65	21			

		SGOT	22	6			
		SGPT	18	5			
		CREATININE	40	14			
		CRP	89	31			
		RBS	43	15			

Bold=p value<0.05, significant

The present study evaluated the association between various demographic, clinical, and laboratory parameters with treatment outcomes among patients. A statistically significant association was observed between risk factors and treatment outcomes ($\chi^2 = 8.9$, df = 6, p = 0.018). Gender-wise analysis revealed no statistically significant association with treatment outcomes ($\chi^2 = 1.22$, df = 1, p = 0.26). A significant association was found between age group and treatment outcomes ($\chi^2 = 10.5$, df = 3, p = 0.015) as indicates statistically significant. The Clinical presentations were also significantly associated with treatment outcomes ($\chi^2 = 5.7$, df=7, p = 0.025) as p value is<0.05. Furthermore, the number of symptoms presented by patients showed a statistically significant relationship with treatment outcomes ($\chi^2 = 14.2$, df = 6, p = 0.028). Laboratory parameters also exhibited a significant association with treatment outcomes ($\chi^2 = 2.6$, df = 5, p = 0.017). The results demonstrated that age, risk factors, clinical presentation, symptom burden, and laboratory parameters were significantly associated with treatment outcomes among patients with pancreatitis ($p < 0.05$), whereas gender showed no statistically significant association.

Discussion

The present study was conducted to evaluate the influence of demographic characteristics, risk factors, clinical features, and laboratory parameters on treatment outcomes among patients with pancreatitis. The findings of this study provide important insights into disease patterns and prognostic indicators.

In the present study, the majority of patients belonged to the 18–40 years age group (55%), followed by the 40–60 years group (31.67%). This indicates that pancreatitis predominantly affects the young and middle-aged population. Similar findings have been reported in Chikatipalli Radhika[7] et al., study , where the disease burden was higher among economically productive age groups. The significant association observed between age and treatment outcome (p = 0.015) further highlights that younger patients tend to have better recovery rates compared to older individuals. This may be attributed to better physiological reserve, fewer comorbidities, and early response to treatment in younger patients, whereas advancing age is often associated with delayed recovery and increased complications.

Gender distribution in this study revealed a marked male predominance (80%), which is consistent with existing literature. This can be largely attributed to higher prevalence of alcohol consumption and smoking among males. However, despite the higher incidence in males, gender did not show a statistically significant association with treatment outcomes (p = 0.26). This suggests that although males are more frequently affected, gender itself does not independently influence prognosis, which is in agreement with several Kant[8] et al., study on Etiology, clinical characteristics and outcomes of acute pancreatitis at the tertiary care centre [42].

Alcohol consumption was identified as the most common risk factor (94.17%) in this study, followed by diabetes, hypertension, and smoking. The strong association between risk factors and treatment outcomes (p = 0.018) indicates that lifestyle-related factors play a crucial role not only in disease causation but also in recovery. Alcohol-induced pancreatitis is known to cause recurrent inflammation and structural damage, which may influence disease severity. Similarly, comorbid conditions like diabetes and hypertension can impair healing and worsen outcomes due to underlying metabolic disturbances. These findings are consistent with Frank Ulrich Weiss[9] et al., study on Etiology & risk factors of acute and chronic pancreatitis that have emphasized the role of modifiable lifestyle factors in determining disease progression and prognosis.

Clinical presentation analysis showed that abdominal pain was the most common symptom (100%), followed by nausea/vomiting and tenderness. A statistically significant association between clinical features and treatment outcomes (p = 0.025) suggests that symptom profile can be an indicator of disease severity. Patients presenting with classical symptoms such as abdominal pain and vomiting were more likely to be diagnosed early and treated promptly, resulting in better outcomes. On the other hand, atypical or less frequent symptoms such as weight loss and diarrhoea were less associated with improvement, possibly due to delayed diagnosis or underlying complications.

The number of clinical features also showed a significant association with treatment outcomes (p = 0.028). Most patients presented with 3–4 symptoms, and those with a moderate number of symptoms demonstrated better outcomes compared to those with a higher symptom burden. This indicates that increasing symptom severity may reflect more extensive pancreatic involvement and systemic inflammation, thereby leading to poorer prognosis. Similar observations have been reported in studies where severity scoring systems correlate with the number of presenting symptoms. Laboratory findings in this study revealed that almost all patients had elevated CRP levels (100%), indicating the presence of inflammation.

Elevated pancreatic enzymes such as amylase (79.17%) and lipase (76.67%) were also commonly observed, confirming their diagnostic significance in pancreatitis. The significant association between laboratory parameters

and treatment outcomes ($p = 0.017$) suggests that biochemical markers can serve as important predictors of disease severity and prognosis. Elevated CRP and WBC levels indicate systemic inflammatory response, while increased creatinine levels may reflect renal involvement or complications, which are associated with poorer outcomes. These findings are in line with Kumar[10] et al., study , that have identified inflammatory and biochemical markers as reliable prognostic indicators in pancreatitis.

The study also observed that the majority of patients had acute pancreatitis (68.33%), while chronic cases accounted for 31.67%. Most patients showed reduction in symptoms (55.83%), with only a smaller proportion achieving complete recovery (18.33%). This indicates that while treatment is effective in symptom control, complete recovery may require longer follow-up and management. Hospital stay duration further supports this, as most patients required less than two weeks of hospitalization. The findings of this study emphasize that age, risk factors, clinical severity, and laboratory parameters are key determinants of treatment outcomes, whereas gender does not significantly influence prognosis. The results are consistent with existing literature and highlight the importance of early diagnosis, risk factor modification, and close monitoring of clinical and biochemical parameters to improve patient.

Conclusion

Pancreatitis was more prevalent among young and middle-aged males, with alcohol consumption identified as the predominant risk factor, followed by smoking, diabetes, and hypertension. Age, risk factors, clinical presentation, symptom burden, and laboratory parameters showed significant associations with treatment outcomes, whereas gender had no significant influence, highlighting the importance of clinical and biochemical factors in predicting prognosis. Early diagnosis, prompt management, lifestyle modification, and regular monitoring of laboratory indicators are essential to improve clinical outcomes and reduce disease-related complications in patients with pancreatitis.

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