

# A Cross-Sectional Study on Aetiology, Clinical Profile and Management of Acute Pancreatitis over a period of Six months' in a Tertiary Medical Care Hospital, YSR Kadapa

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## ABSTRACT

**Background:** An inflammation of the pancreas that lasts only a short time is called Acute Pancreatitis (AP). High levels of pancreatic enzymes in the blood and significant upper abdominal pain are its defining characteristics. Acute pancreatitis is typically a benign, self-limiting condition that cures itself without any problems. **Objectives:** The current study's objective was to assess the prevalence of various AP etiologies, compare the variations in clinical characteristics among patients with various AP causes, assess the length of hospital stay, review the diagnostic techniques used to confirm AP, and monitor the clinical management of AP. **Materials and Methods:** A six-month prospective observational research study in a multifunctional tertiary hospital with 750 beds. The statistical analysis and evaluation of the acute pancreatitis clinical profile were done using SPSS (Statistical Package for Social Sciences). **Results:** The study included 50 patients in total. Males outnumbered females 96% to 4%, with a mean age of 34.7. Alcoholism accounted for the majority of the subjects' 44 (88%). Abdominal pain was the most common symptom, reported by all 50 (100%) of them, followed by nausea and vomiting in 38 (76%), The majority of them were prescribed Ceftriaxone, which was given to 22 (44%) of them, followed by 13 (26%) prescriptions for Metronidazole, 10 (20%) for Meropenem, 6 (12%) for Cef-Sulbactam, and 4 (8%) for Ciprofloxacin. Pancreoflat was prescribed for 33 (66%). Proton-pump inhibitors were administered to 50 (100%) patients, followed by antacids in 22 (44%) cases, and histamine type 2 receptor blockers in 1 (2%) cases. 48 (96%) of them spent between 1 and 10 days in the hospital, 1 (2%) between 11 and 20 days, and 1 (2%) between 21 and 30 days. **Conclusion:** The study's findings suggest that untreated acute pancreatitis can result in major side effects. Multicenter research involving a significant patient sample and the longer time durations is also recommended.

**Keywords:** Acute Pancreatitis, Alcohol, Abdomen Pain, Ceftriaxone, Pancreoflat, Hospital stay.

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## INTRODUCTION

Pancreatitis is an inflammation of the pancreas that is associated with a systemic inflammatory response and organ dysfunction.<sup>1</sup> High levels of pancreatic enzymes in the blood and excruciating upper abdominal pain are symptoms of

acute pancreatitis.<sup>2</sup> In the majority of cases, AP is a minor, curable illness that resolves spontaneously without complications.<sup>3</sup> The presence of "2 out of 3" of the following criteria-clinical (upper abdominal pain), laboratory (serum amylase or lipase > 3x the upper limit of normal), and/or imaging-defines acute pancreatitis (Computed



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Tomography (CT), Magnetic Resonance Imaging (MRI), and ultrasonography).<sup>4</sup>

Acute pancreatitis can range from mild (absence of organ failure and local or systemic complications) to moderately severe (no organ failure or transient organ failure lasting less than 48 hr with or without local complications) to severe (absence of organ failure and systemic complications; (persistent organ failure lasting more than 48 hr that may involve one or multiple organs)).<sup>5</sup> There are currently two separate phases of acute pancreatitis: Systemic Inflammatory Response Syndrome (SIRS) and/or organ failure are indicative of early (within 1 week), and local consequences are indicative of late (> 1 week) stages. Pancreatic and peripancreatic necrosis (sterile or infectious), pseudocysts, and walled-off necrosis are all examples of local consequences (sterile or infected). The term “necrotizing” also refers to isolated extra pancreatic necrosis. When compared to patients with interstitial pancreatitis, patients with pancreatic parenchymal necrosis more frequently have consequences such as chronic organ failure, infected necrosis, and mortality.<sup>6</sup>

A complete personal history should be used to determine the origin of acute pancreatitis (for example, prior acute pancreatitis, gallstones, consuming alcohol or drugs, hyperlipidemia, trauma, and pancreatic disease in the family), as should a physical examination, clinical serum tests, and imaging. The causes include idiopathic, gallstones, ethanol, trauma, steroids, infections, autoimmunity, scorpion stings, hypercalcemia, hypertriglyceridemia, Endoscopic Retrograde cholangiopancreatography (ERCP), and drug-induced pancreatitis. The clinical features include abdominal pain, which is the most common presenting symptom; nausea and vomiting are other common symptoms.<sup>7</sup> A diagnosis can be made by measuring serum amylase, lipase, triglycerides, imaging, abdominal ultrasound, and endoscopic ultrasound to diagnose acute pancreatitis. Treatment includes adequate fluid therapy, pain management, nutritional support, Antiproteases like Gabexate, anti-secretive like somatostatin, antioxidants like N-acetyl cysteine, Non-steroidal Anti-inflammatory Drugs (NSAID's), Tumor Necrosis Factor (TNF)- $\alpha$  inhibitors and prophylactic antibiotic therapy.

## OBJECTIVES

- To determine and compare the prevalence rates of different etiologies of AP.
- To compare the differences in symptoms among patients with different causes of AP.

- To evaluate the length of hospital stay based on severity of AP.
- To review the diagnostic methods used to confirm AP.
- To observe the clinical management of AP.

## Components and Methods

For a period of six months, the prospective observational study was conducted among patients in the department of General Medicine at the Government General Hospital (RIMS), Kadapa. Patients of either sex, who were older than 20 years old, with or without co-morbid conditions, were included. Patients under the age of 20 and those unwilling to take part in the study were not allowed in this investigation. The individuals' demographics, co-morbidities, and prescription patterns were reported.

## Study Site

The present study was carried out in the Inpatient Department of General Medicine at a 750 bedded multidisciplinary tertiary care teaching hospital (GGH-RIMS), Kadapa, Andhra Pradesh, India. This College provides a good ratio of well-trained and highly educated faculty members equipped with modern technology. It also offers sufficient non-technical staff to the students.

## Study Design

A Prospective Observational Study.

## Study Duration

This study was carried out for a period of 6 months.

## Study Criteria

The study was conducted by considering the following criteria:

### Inclusion Criteria

- Patients who are willing to participate in the study.
- Patients who are diagnosed with Acute Pancreatitis.
- Patients who are above 20 years of age.

### Exclusion Criteria

- Patients who are not willing to participate in the study.
- Patients who are diagnosed with chronic pancreatitis.
- Patients who are below 20 years of age.

## IEC Approval

The study was approved by the Institutional Ethics and Research Committee of Rajiv Gandhi Institute of Medical Sciences, Kadapa. The data collected were tabulated and analyzed using Microsoft Excel 2007 using SPSS Software.

**Approval date:** 10-02-2022, Ref No: PRRMCP/IEC/2021/11/02

## Sample Size

50 patients diagnosed with Acute Pancreatitis according to the eligibility criteria take part in the RIMS Hospital, Kadapa, Andhra Pradesh, India were taken part in the present study.

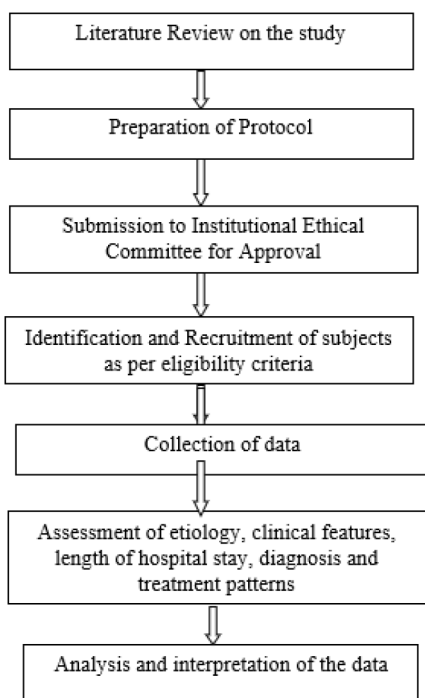
The Sample size was calculated as directed by the Biostatics professor from our college, using the formula as mentioned below.

Sample Size Formula =  $[z^2 * p (1-p)] / e^2 / 1 + [z^2 * p (1-p)] / e^2 * N]$

Where,

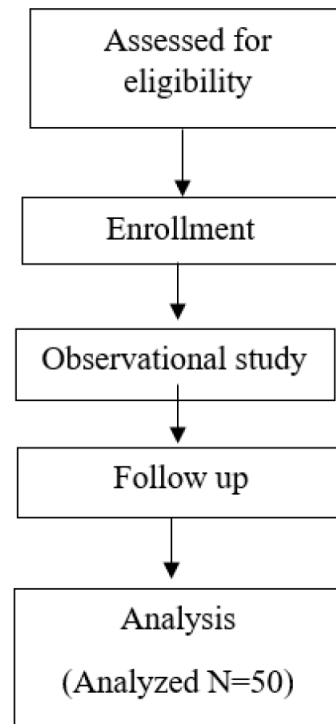
- N is the population size
- z is the z-score
- e is the margin of error
- p is the standard of deviation

## Method of Study



## RESULTS

### Consort Flow Chart



The six-month prospective observational study took place at Rajiv Gandhi Institute of Medical Sciences (GGH-RIMS), Kadapa, for a total of six months. Sum of, 50 acute pancreatitis patients participated in the trial. With regard to the patient age group (> 25 years), study duration (6 months), and prevalence at study site, we had chosen this sample size (GGH-RIMS, Kadapa).<sup>8</sup>

### Data on the patient's demographics

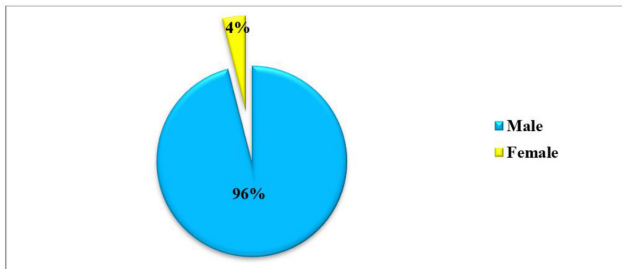
Throughout the study period, the patients' fundamental demographics were assessed. The mean age was determined to be 34.7 years, with the age range covering 25 to 65 years. 48 (96%) of the patients were male, while only 2 (4%) were female. There were 15 comorbidities in total, of which 7 (46%) were diabetes mellitus, 3 (21%) were renal calculi, and 5 (33%) were liver disease brought on by alcoholism. 46 participants were evaluated for their social habits, and it was found that 18 (39%) of them drank alcohol and 28 (61%) of them also smoked. Over the past 30 years, acute pancreatitis incidence has dramatically increased in the UK and in many studies of other European or western nations, but not all of them. All the details summarized in Table 1.

### Study participants gender distribution

Out of 50 subjects participating in the study, it was noted that 48 (96%) were men and 2 (4%) were females as seen in Figure 1.

**Table 1: Demographic characteristics of various classes of acute pancreatitis.<sup>9</sup>**

Patient demographic details	n = 50
<b>Mean age</b>	34.7 years
Range	25 to 65 years
<b>Gender</b>	50 (100%)
Males	48 (96%)
Females	2 (4%)
<b>Co-morbidities</b>	15 (100%)
Diabetes mellitus	7 (46%)
Renal calculi	3 (21%)
Alcoholic liver disease	5 (33%)
<b>Social habits</b>	46 (100%)
Alcoholism	18 (39%)
Alcoholism + Smoking	28 (61%)



**Figure 1: Distribution of study participants by gender is shown in a pie chart.**

**Table 2: Acute pancreatitis participants age wise distribution.**

Sl. No	Age group	No. of patients	Percentage of patients
1.	21-30	19	38%
2.	31-40	22	44%
3.	41-50	6	12%
4.	51-60	2	4%
5.	61-70	1	2%

### Age-wise distribution of the study participants

Out of 50 individuals, for the most part 22 (44%) were discovered to be in the age range of 31-40 years after that 19 (38%) among the age group 21-30 years, 6 (12%) among the age group 41-50 years, 2 (4%) among the age group 51-60 years, 1 (2%) among the age group 61-70 years according to Table 2. The participants' average age was found to be 35.5 years as seen in Table 2.

### Participant distribution for the study based on etiology

Out of 50 participants, majority 44 (88%) were alcoholics followed by Hypertriglyceridemia 2 (4%), Idiopathic 2 (4%), Alcohol+Hypertriglyceridemia 1 (2%) and Biliary 1 (2%) as represented in Table 3.

**Table 3: Etiologies of the study participants.**

Sl. No	Social habits	No. of subjects	Percentage of subjects
1.	Alcohol	18	36%
2.	Alcohol + Smoking	28	56%
3.	None	4	8%

**Table 4: Clinical features of the study participants.**

Sl. No	Clinical features	No. of patients	Percentage of subjects
1.	Abdominal pain	50	100%
2.	Nausea and vomiting	38	76%
3.	Anorexia	18	36%
4.	Constipation	13	26%
5.	Shortness of breath	9	18%
6.	Fever	7	14%
7.	Diarrhea	5	10%
8.	Burning micturition	3	6%
9.	Chest pain	4	8%
10.	Jaundice	2	4%
11.	Headache	2	4%

### Distribution of study participants based on clinical features

The current study looked into 50 people, and it was discovered that pain in abdomen existed as usual symptom in all participants 50 (100%) followed by nausea and vomiting in 38 (76%), anorexia in 18 (36%), constipation in 13 (26%), shortness of breath in 9 (18%), fever in 7 (14%), diarrhea in 5 (10%), burning micturition in 3 (6%), chest pain in 4 (8%) and jaundice in 2 (4%) as represented in Table 4.

### Distribution of patients prescribed with antibiotics

Out of 50 participants it was found that majority of them 22 (44%) were prescribed with ceftriaxone followed by 13 (26%) were prescribed with metronidazole, 10 (20%) were prescribed with meropenem, 6 (12%) were prescribed with cef-sulbactam, 4 (8%) were given with ciprofloxacin, 3 (6%) were prescribed with piptaz, 2 (4%) were given with augmentin, 2 (4%) were given with cefixime, 1 (2%) were given with norfloxacin and 1 (2%) were prescribed with cefotaxime as represented in Figure 2.

### Distribution of study participants prescribed with pancreoflat

Instances of pancreoflat were investigated in 50 subjects'

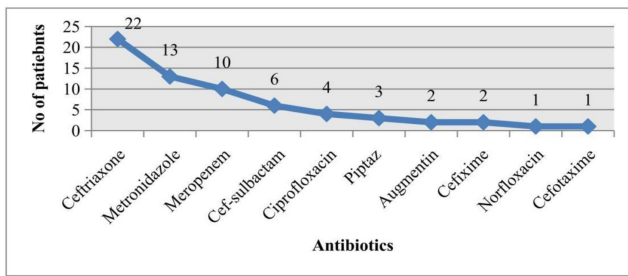


Figure 2: Line graph representing the antibiotics prescribed to the study participants.

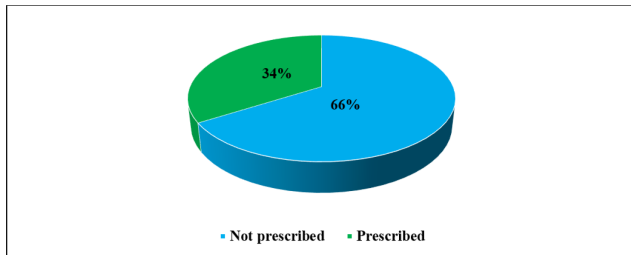


Figure 3: Pie chart representing the study participants prescribed with pancreoflat.

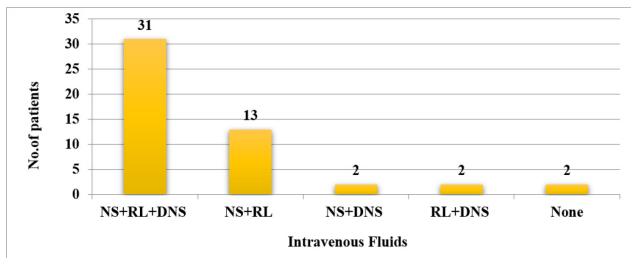


Figure 4: Bar graph representing the patients prescribed with intravenous fluids.

total majority i.e., 33 (66%) were not given pancreoflat and rest 17 (34%) were given with pancreoflat as represented in Figure 3.

### Distribution of study participants prescribed with intravenous fluids

The current study looked into 50 patients and it was discovered that majority of the participants 31 (62%) were given with NS+RL+DNS followed by 13 (26%) were given with NS+RL, 2 (4%) were given with NS+DNS, 2 (4%) were given with RL+DNS and 2 (4%) were not given with any type of intravenous fluids as represented in Figure 4.

### Distribution of study participants based on length of hospital stay

Out of 50 participants it was seen that majority of them 48 (96%) were in between 1-10 days followed by 1 (2%) was in between 11-20 days and 1 (2%) was in between 21-30 days as represented in Table 5.

Table 5: Length of hospital stays of the study participants.

Sl. No	Length of stay	No. of patients	Percentage of patients
1.	1-10 days	48	96%
2.	11-20 days	1	2%
3.	21-30 days	1	2%

## DISCUSSION

50 patients total were enrolled in the trial, 48 (96%) of the subjects were found to be males and 2(4%) of the subjects were found to be females. According to the study, there were more male participants with acute pancreatitis than female. The outcomes matched those of the research by Vengadkrishnan *et al.*<sup>9</sup> Patients who previously had pancreatitis were considerably more likely to develop alcohol induced pancreatitis and less likely to develop gall stone pancreatitis. More than half of the patients in the current study i.e., 54% have experienced pancreatitis earlier. In contrast to our study, Maryam Nesvaderami *et al.* discovered that just 11.9% of the patients or less than half, have previously experienced pancreatitis.<sup>10</sup>

Alcohol use was the most common cause in the current investigation, affecting 88% of patients, in 4% of the patients the etiology was idiopathic and in 2% of the patients the etiology was biliary. Two patients were found to have AP as a result of Hypertriglyceridemia. The most common causes of AP, according to Biag *et al.* were biliary stones and alcoholism. Later is consistent with our study, which found that alcoholism was the most common cause.<sup>11</sup> The most common causes of acute pancreatitis, according to Wang *et al.* are biliary stones and alcohol addiction, respectively.<sup>12</sup>

In the present study, it was noted that males were affected predominantly which could be partly due to social habits. With a range between 25 and 65 years, the study population's average age was 34.7 years in the current research. In the similar study conducted by Ekka *et al.* the average age of the study population was 36.14 years.<sup>13</sup>

In our experience, there was no difference between the clinical characteristics of different etiologies of AP. Out of 50 patients, abdominal pain was the most prevalent symptom in our study, occurring in 100% of cases. This was followed by vomiting in 76% of people, and fever in 14% of people. In a related research, Gail P. Reid *et al.* colleagues found that fever and vomiting were experienced by 71.8% and 16.5% of patients respectively, and that pain in abdomen was reported in 79.1% of subjects.<sup>14</sup>

In the current research, we have seen that imaging (such as abdominal ultrasonography and computed tomography) and serum lipase and serum amylase are the diagnostic tools employed in the tertiary hospital for AP. Although a CT scan performed soon after admission has little utility, this research indicated that 42% of CT scans were performed within 72 hr of admission. Jian Wei Tan *et al.* discovered that 79% of CT scans were performed within 72 hr after admission, which is consistent with our analysis.

The Japanese standards and the IAP/APA propose Ringer lactate as the preferable fluid as fluid resuscitation is the cornerstone of pancreatitis early therapy. In our study, we discovered that 82% of patients received Ringer lactate while 96% of patients received IV fluids in general. Ringer lactate was chosen as the fluid resuscitation method in 50% of patients, according to a study by Jian Wei Tan *et al.* The routine use of antibiotics in severe acute pancreatitis is still widespread practice, however little evidence supports this, according to a meta study. Since 84% of the patients in the current research received prophylactic antibiotics, there is a clear need for better antibiotic stewardship. In contrast to our analysis, Jian Wei Tan *et al.* found that 36% of patients received prophylactic antibiotics.<sup>15</sup>

There are no explicit recommendations for AP pain control, despite the suggestion that step-up pain control be used for cancer pain. In the US, parenteral opioids were the first line of treatment for pain management in roughly 80% of AP patients. In our investigation, we discovered that parenteral opioids were initially administered for 94% of patients. The mean hospital duration in this study subjects was 5.9 days with ranges between 3 and 21 days. In contrast to our study, Enas Ahmed Reda Alkareemy *et al.* found that the mean hospital duration for the patients they looked at was  $6.89 \pm 1.98$  days, with a range of 3 to 21 days.<sup>16</sup> Our study does have certain limitations. We were unable to determine the most common etiology in females because the research was only conducted for a minimum duration of 6 months, and also our sample size was little bit small.

## CONCLUSION

In the current investigation, which included 50 acute pancreatitis patients, it was shown that males were more likely to have this illness than females (96% men and 4% women). Most of the subjects were in the 31-40 age range, with average of 35.5 years. Alcohol is a significant a potential risk for developing acute pancreatitis, as evidenced by the fact that this ailment is more common

in alcoholics than in non-alcoholics. In our investigation, it was discovered that renal calculi, diabetes mellitus, and alcoholic liver disease were the most prevalent co-morbidities among the subjects. Additionally, it was found that participants with various causes of acute pancreatitis shared the same clinical characteristics. Depending on their severity, patients spent an average of 5.9 days in the hospital, ranging from 3 to 21 days. The study shows that parenteral opioids are typically provided as the first line of treatment for pain control in the majority of individuals, while antibiotics are often prescribed as a preventative therapy for acute pancreatitis. The study comes to the conclusion that if acute pancreatitis is not well managed, major consequences may result. It is advised to conduct multicenter research with a sizable patient sample.

## ACKNOWLEDGEMENT

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## CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

## ABBREVIATIONS

**AP:** Acute Pancreatitis; **APA:** American Pancreatic Association; **CT:** Computed Tomography; **DNS:** Dextrose Normal Saline; **ERCP:** Endoscopic Retrograde Cholangio Pancreatography; **IAP:** International Association of Pancreatology; **MRI:** Magnetic Resonance Imaging; **NS:** Normal Saline; **NSAIDs:** Non-Steroidal Anti-Inflammatory Drugs; **RL:** Ringers Lactate; **SPSS:** Statistical Package for Social Sciences.

## SUMMARY

To determine the causes of hypercalcemia, hyperlipidemia, and autoimmune conditions, biochemical data on blood calcium, triglyceride levels, and immunoglobulin 4 (IgG4) were examined. Based on the patient's medical history, pancreatitis caused by trauma, ERCP, and medicines was found. In our study, alcohol use was the most common cause, followed by idiopathic conditions, hypertriglyceridemia, and then gallstones. Additionally, it was noted that fever, vomiting, diarrhea, constipation, and stomach pain were among the most prevalent clinical symptoms of AP. We discovered that practically all

patients received IV fluids, and 82% of patients received Ringer's lactate specifically. In this study, we discovered that parenteral opioids were initially administered for 94% of patients. Prophylactic antibiotic use has been controversial, yet research shows that 84% of patients receive antibiotic prescriptions, despite recommendations from the IAP/APA and the Japanese guidelines against intravenous prophylaxis.

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