



CLINICOEPIDEMIOLOGICAL PROFILE OF NON-TRAUMATIC ACUTE ABDOMINAL PAIN PATIENTS PRESENTING IN THE EMERGENCY ROOM OF A TERTIARY CARE TEACHING HOSPITAL

Emergency Medicine

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ABSTRACT

Background: Non-traumatic acute abdominal pain is a common presentation in emergency departments, with a wide range of aetiologies requiring prompt evaluation and management. **Methods:** This prospective observational study was conducted in a tertiary care teaching hospital and included 153 patients aged ≥ 12 years presenting with non-traumatic acute abdominal pain of ≤ 5 days duration. Data regarding demographics, clinical presentation, vital parameters, investigations, and final diagnosis were collected and analysed using descriptive statistics. **Results:** The mean age was 53.16 ± 17.76 years, with near-equal gender distribution. Most patients presented within 24–48 hours, and moderate-to-severe pain was reported by the majority. Vomiting was the most common associated symptom. The leading diagnoses were renal calculi (17.65%), appendicitis (11.11%), urinary tract infection (9.80%), pancreatitis (8.50%), and intestinal obstruction (7.84%). Most patients were hemodynamically stable, though a subset presented with signs of systemic compromise. **Conclusion:** Non-traumatic acute abdominal pain encompasses diverse clinical conditions, with renal and gastrointestinal causes predominating. A structured approach integrating clinical assessment, vital signs, and appropriate imaging is essential for timely diagnosis and management.

KEYWORDS

Non-traumatic Abdominal Pain; Abdominal Emergencies; Emergency Medicine

INTRODUCTION

Non-traumatic acute abdominal pain (NT-AAP) is a common emergency department presentation, accounting for 5–20% of visits worldwide (1,2). It includes a wide spectrum of conditions ranging from benign disorders to life-threatening surgical emergencies such as perforation, peritonitis, and intestinal obstruction (3). Early diagnosis through clinical evaluation and appropriate investigations is essential to reduce morbidity and mortality (4,5).

Ultrasonography is commonly used as the initial imaging modality, while contrast-enhanced computed tomography (CECT) is valuable in severe or undifferentiated cases (6,7). The pattern of NT-AAP varies geographically, with studies from India reporting a higher prevalence of renal colic, peptic ulcer disease, intestinal obstruction, and perforation (1,9). Understanding local disease patterns is important for improving emergency care. Therefore, this study aimed to evaluate the Clinico-epidemiological profile of adult patients presenting with NT-AAP to a tertiary care emergency department (10).

MATERIALS AND METHODS

This prospective observational study was conducted in the Emergency Medicine Department of a tertiary care teaching hospital in Pune, India. Patients with non-traumatic acute abdominal pain were enrolled after obtaining ethical approval and informed consent. Demographic, clinical, laboratory, and imaging data were collected using a structured proforma. Pain severity was assessed using the Numerical Rating Scale (NRS). Data were analysed using descriptive statistics and expressed as mean $\pm$ standard deviation or frequency and percentage, as appropriate.

AIMS -

To evaluate the Clinico-epidemiological profile of patients presenting with non-traumatic acute abdominal pain to the emergency department and identify factors influencing diagnosis and management.

OBJECTIVES -

- To describe the demographic profile of patients presenting with non-traumatic acute abdominal pain.

- To evaluate the clinical presentation and severity of abdominal pain in these patients.
- To identify common aetiologies and associated risk factors of non-traumatic acute abdominal pain.
- To assess the diagnostic approach and investigations utilized in the emergency department.

Inclusion criteria:

- All patients aged ≥ 12 years,
- Patients presenting to the emergency room with acute abdominal pain
- Non-traumatic abdominal pain presentation
- Non-traumatic abdominal pain with a maximum duration of 5 days.

Exclusion criteria:

- Traumatic abdominal pain,
- Non-surgical causes of acute abdominal pain
- Non-traumatic abdominal pain in pregnant women and other gynaecological complaints.
- Non-emergency hospitalization
- Refusal to give consent.
- Patients with pre-existing chronic abdominal conditions.
- Patients have had recent surgery (within 6 months).

RESULTS

Age

Table No.1

Mean Age	SD Age	Range Age
53.16	17.76	18 – 83

The mean age was 53.16 ± 17.76 years (range 18–83 years), indicating that non-traumatic acute abdominal pain affects a wide adult age group.

Gender Distribution

Table No.2

Sex	Count	Percentage
Male	79	51.63%
Female	74	48.37%

The study population showed a nearly equal sex distribution, with 51.63% males and 48.37% females, indicating no significant gender predominance.

Vital Parameters

Table No.3

Variable	Mean	SD
Heart Rate (bpm)	99.59	12.66
SBP (mmHg)	113.23	10.99
DBP (mmHg)	72.21	8.98
Respiratory Rate (/min)	21.35	3.51
SpO ₂ (%)	97.39	1.99
Temperature (°C)	37.58	0.52
GCS	14.93	0.25

The vital parameters indicated that most patients were hemodynamically stable at presentation, with preserved oxygen saturation, blood pressure, and consciousness. Mild elevations in heart rate and respiratory rate were observed, likely reflecting the physiological response to acute abdominal pain.

Capillary Refilling Time

Table No.4

CRT	Count	Percentage
<3	145	94.77%
>3	8	5.23%

Capillary refill time was <3 seconds in 94.77% of patients, indicating preserved peripheral perfusion in the majority.

Duration of Abdominal Pain

Table No.5

Duration of Pain	Count	Percentage
24–48h	48	31.37%
12–24h	44	28.76%
>48h	37	24.18%
<12h	24	15.69%

Pain Score

Table No.6

Pain Score	Count	Percentage
5–7	89	58.17%
8–10	57	37.25%
1–4	7	4.58%

Localization of Abdominal Pain

Table No.7

Localization	Count	Percentage
Flank	32	20.92%
Diffuse	29	18.95%
Suprapubic	26	16.99%
Epigastric	22	14.38%
RUQ	21	13.73%
RLQ	17	11.11%
Groin	6	3.92%

Radiation of Abdominal Pain

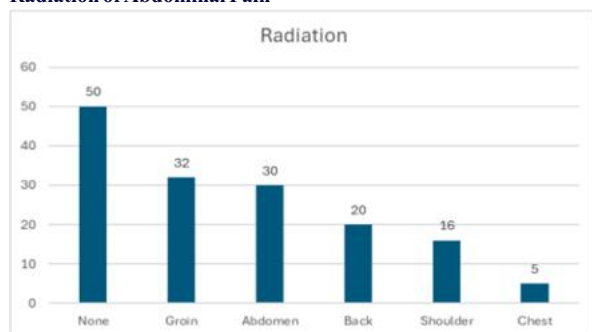


Figure No.1

Character of Abdominal Pain

Table No.8

Character	Count	Percentage
Sharp	42	27.45%
Dull aching	39	25.49%
Colicky	36	23.53%

Cramping	29	18.95%
Burning	7	4.58%

Most patients presented within 48 hours of symptom onset, with moderate to severe pain being the predominant complaint. Flank and diffuse abdominal pain were the most common sites of localization, while sharp, dull aching, and colicky pain were the predominant pain characteristics. Variations in pain location, radiation, and character provided important clinical clues for diagnosis and early management of non-traumatic acute abdominal pain.

Symptoms associated with Abdominal Pain

Table No.9

Symptoms	Count	Percentage
Vomiting	94	61.43%
Urinary symptoms	15	9.8%
Loss of appetite	9	5.88%
Constipation	27	17.64%
Abdominal distension	27	17.64%
Jaundice	4	2.61%

Vomiting (61.43%) was the most common associated symptom, followed by constipation (17.64%) and abdominal distension (17.64%). Urinary symptoms (9.8%), loss of appetite (5.88%), and jaundice (2.61%) were less frequent. These associated symptoms provided important diagnostic clues and aided in identifying the underlying cause of acute abdominal pain.

Diagnosis

Renal calculi (17.65%) were the most common diagnosis, followed by appendicitis (11.11%), UTI (9.80%), pancreatitis (8.50%), intestinal obstruction (7.84%), acute urinary retention (7.19%), and cholelithiasis (7.19%). Less common diagnoses included peptic disease, complicated hernia, perforation, cholecystitis, ureteric calculi, peritonitis, mesenteric ischemia, liver abscess, and gastrointestinal malignancies.

The findings demonstrate a broad spectrum of surgical, medical, and urological causes of non-traumatic acute abdominal pain. While most patients presented with common benign conditions, a significant proportion had potentially life-threatening disorders requiring urgent diagnosis and intervention. These results highlight the importance of a systematic approach in the emergency department for the timely identification and management of acute abdominal pain.

Diagnosis Distribution

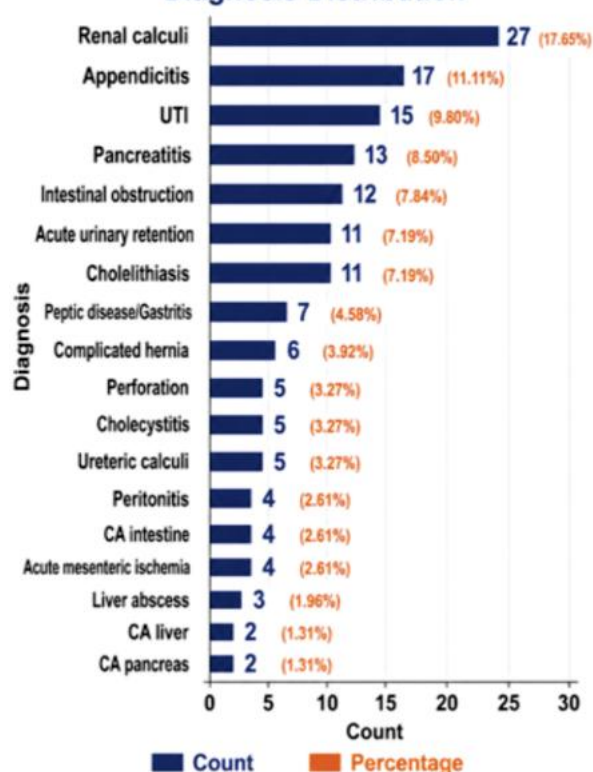


Figure No.2

DISCUSSION

Non-traumatic acute abdominal pain is a common emergency department presentation with a wide range of underlying causes [11]. This study evaluated 153 adult patients presenting with non-traumatic acute abdominal pain in a tertiary care emergency setting. The findings provide insight into the demographic profile, clinical characteristics, and diagnostic spectrum of these patients and are compared with observations from previous Indian and international studies.

Demographics

The mean age of patients in this study was 53.2 ± 17.8 years, indicating that non-traumatic acute abdominal pain predominantly affected middle-aged and elderly individuals. This finding is comparable to previous Indian and international studies, although the mean age in our cohort was slightly higher [12–14].

The sex distribution was nearly equal, with 51.6% males and 48.4% females, consistent with earlier reports from India [15]. The balanced gender distribution suggests that non-gynaecological abdominal emergencies affect both sexes almost equally, reflecting the diverse range of underlying aetiologies observed in this study [16,17].

Vital Signs

The vital sign profile of our patients indicated that most were hemodynamically stable at presentation. The mean heart rate and respiratory rate were mildly elevated, while blood pressure, oxygen saturation, temperature, and GCS values remained largely within normal limits. Similar findings have been reported in previous studies, where abnormalities in vital signs were associated with more severe underlying pathology and poorer outcomes [12,18–23].

Overall, these findings highlight the importance of assessing vital signs to identify high-risk patients presenting with acute abdominal pain [18–23].

CLINICAL FEATURES

Duration of Pain

Most patients presented within 48 hours of symptom onset, although delayed presentation beyond 48 hours was also common and may increase the risk of complications [15,24].

Pain Intensity

Moderate pain was the predominant presentation, followed by severe pain, highlighting pain severity as a major factor influencing emergency department visits [25,26].

Localization

Flank and diffuse abdominal pain were the most frequent sites of localization, supporting the importance of pain location in guiding differential diagnosis [13,27].

Radiation and Character

Groin and abdominal radiation were the most common radiation patterns, while sharp, dull aching, and colicky pain predominated. These characteristics provide valuable diagnostic clues in acute abdominal pain assessment [28,29].

Associated Symptoms

Vomiting was the most common associated symptom, followed by constipation and abdominal distension. Urinary symptoms, anorexia, and jaundice were less frequent but contributed to identifying the underlying aetiology [15,30].

Diagnosis Spectrum

Renal calculi were the most common diagnosis, followed by appendicitis, urinary tract infection, pancreatitis, intestinal obstruction, acute urinary retention, and cholelithiasis. The findings highlight the broad spectrum of non-traumatic acute abdominal pain, encompassing urological, gastrointestinal, hepatobiliary, and surgical conditions. Several potentially life-threatening disorders, including perforation, peritonitis, mesenteric ischemia, and gastrointestinal malignancies, were also identified. Similar patterns have been reported in previous Indian studies, emphasizing the need for a systematic diagnostic approach and timely intervention to reduce morbidity and improve patient outcomes [15,31,33,35].

CONCLUSION

Non-traumatic acute abdominal pain is a common emergency department presentation affecting predominantly middle-aged and

elderly patients, with no significant gender predilection. Renal calculi, appendicitis, urinary tract infection, pancreatitis, and intestinal obstruction were the most frequent diagnoses. Pain characteristics, associated symptoms, and vital signs played an important role in early diagnosis and risk stratification.

Most patients were hemodynamically stable at presentation; however, abnormal vital signs were associated with more severe pathology. A structured approach incorporating clinical evaluation, laboratory investigations, and appropriate imaging facilitates timely diagnosis and management. Early recognition and intervention are essential for improving patient outcomes and reducing complications in acute abdominal pain.

REFERENCES

- Shinde V, Patil S, Kumbhar S, et al. Clinical and epidemiological profile of patients presenting to the emergency department with abdominal pain. *Int J Emerg Med.* 2024;17(1):45.
- Slagman A, et al. Non-traumatic abdominal pain in emergency departments: background of a multicentre trial. *BMC Emerg Med.* 2025;25:17.
- Lameris W, et al. Imaging strategies for detection of urgent conditions in patients with acute abdominal pain: diagnostic accuracy study. *BMJ.* 2019;364:l236.
- Yew KS. Acute abdominal pain in adults: evaluation and diagnosis. *Am Fam Physician.* 2023;107(6):597-606.
- Scheirey CD, Fowler KJ, Therrien JA, et al. ACR Appropriateness Criteria® Acute Nonlocalized Abdominal Pain. *J Am Coll Radiol.* 2018;15(11S):S217-S231.
- Wang RC, et al. Trends in use of diagnostic imaging for abdominal pain in emergency departments. *AJR Am J Roentgenol.* 2021;216(6):1413-1421.
- Petkovska I, et al. Imaging of acute abdominal pain: evidence-based strategies. *Abdom Radiol.* 2020;45(4):1195-1208.
- Di Saverio S, et al. Diagnosis and treatment of acute appendicitis: 2020 update of the WSES Jerusalem guidelines. *World J Emerg Surg.* 2020;15:27.
- Pal S, et al. Epidemiology of acute abdominal pain: a cross-sectional study in Eastern India. *Int Surg J.* 2019;6(2):421-426.
- Singh A, et al. Clinical profile and outcomes of acute abdominal pain in a tertiary care hospital in North India. *J Family Med Prim Care.* 2018;7(3):600-605.
- Laurell H, Hansson LE, Gunnarsson U. Acute abdominal pain in adults: clinical and epidemiological aspects. *Scand J Gastroenterol.* 2017;52(9):1072-8.
- Shinde V, Dixit Y, Penmetsa P, et al. Clinical and Epidemiological Profile of Patients Presenting with Acute Abdomen to the Emergency Department of a Tertiary Care Hospital. *Cureus.* 2024;16(8):e67017.
- Thakur JK, Kumar R. Epidemiology of acute abdominal pain: a cross-sectional study in a tertiary care hospital of Eastern India. *Int Surg J.* 2019;6(2):345-8.
- National Emergency Laparotomy Audit. Annual Report 2019. Royal College of Anaesthetists, London; 2019.
- Chanana L, Jegaraj MA, et al. Clinical profile of non-traumatic acute abdominal pain presenting to an adult emergency department. *J Family Med Prim Care.* 2015;4(3):422-5.
- Kishan AM, Srinivasulu K, et al. Socio-demographic and clinical profile of acute abdomen in a tertiary care hospital, Hyderabad. *Indian J Forensic Med Toxicol.* 2023;17(2):1-6.
- Laurell H, et al. Epidemiology of acute abdomen in Sweden. *Scand J Gastroenterol.* 2017;52(9):1072-8.
- Dadeh A, et al. Factors associated with unfavorable outcomes in patients with abdominal pain. *BMC Emerg Med.* 2022;22:761.
- Catena F, et al. The importance of vital signs in patients with acute abdomen: a prospective study. *World J Emerg Surg.* 2020;15:59.
- Cretikos M, et al. Respiratory rate as a predictor of clinical deterioration: an updated evidence review. *Emerg Med J.* 2018;35(9):607-12.
- Yadav R, et al. Clinical presentation and outcomes of acute abdominal pain: a prospective observational study. *Int Surg J.* 2021;8(9):2678-83.
- Mallick IH, et al. Risk factors for mortality in emergency laparotomy: a prospective study. *Ann R Coll Surg Engl.* 2017;99(4):259-64.
- Schrager DL, Baraff LJ. Capillary refill time revisited: current evidence and implications. *Emerg Med J.* 2019;36(1):65-71.