ORIGINAL ARTICLE

Demographic Pattern of Pancreatitis Patients in India – A Hospital-based Study

Vaidya Balendu Prakash[1], Shikha Prakash[2], Neha Negi[2], Sneha Tiwari Sati[1]

[1]VCPC Research Foundation, Prakash Villa, Danpur Area, Rudrapur, Uttarakhand, India

[2]Padaav – A Specialty Ayurvedic Treatment Centre, Ratanpura, Gadarpur, Udham Singh Nagar, Uttarakhand, India

CORRESPONDING AUTHOR

Dr Vaidya Balendu Prakash, Ayurvedic Consultant, VCPC Research Foundation, Prakash Villa, Beside Rave Cinemas, NH 74, Danpur Area, Rudrapur - 263153, Uttarakhand.

Email: balenduprakash@gmail.com

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Abstract

Background: Pancreatitis, an inflammatory disease of the pancreas, is emerging as a significant health concern globally, with an increasing incidence in India. Historically, the disease was first identified in India in 1937, and since then, research efforts have expanded, focusing on regional patterns and causative factors. **Methodology:** This hospital-based study analyzes the demographic and clinical characteristics of 2,050 patients diagnosed with pancreatitis between January 1997 and November 2024, treated at leading hospitals across India. Key parameters, including age, gender, region, dietary habits, and lifestyle patterns, were evaluated to identify demographic trends and risk factors associated with the disease. **Result:** The study revealed a predominantly male population (83%) with an average age of 24 years and a significant proportion (75%) of adult patients aged 19–45 years. Similarly, only 33.6% of patients reported alcohol consumption, and tobacco use was documented in 18.4% of cases. Furthermore, genetic predisposition was observed in 8.8% of patients, while gallstone-related pancreatitis accounted for 5% of cases. **Conclusion:** The findings indicate the need for broader epidemiological studies to understand the regional and lifestyle factors contributing to the rising incidences of pancreatitis in India.

Keywords

Pancreatitis; Tropical Pancreatitis; Epidemiology; Demographic Trends; Pancreatic Disorders

Introduction

Pancreatitis, a significant gastrointestinal disorder, has been studied extensively since its first description in 1579 by Jacobo Auberto Vindone (1). In India, Mangalore Gopal Kini reported the first case of pancreatic stones in 1937 (2). Over time, research has classified pancreatitis into acute and chronic forms (3), with an increasing global prevalence of approximately 50 cases per 100,000 people (4). In India, the southern region has reported the highest incidence, ranging from 114 to 200 cases per 100,000 people (5). The TIGARO classification helps identify etiological factors, with gallstones and alcohol consumption being the primary causes (6,7). However, India also reports a unique form—Tropical Pancreatitis—

often associated with protein deficiency and mineral malnutrition (8).

This study builds upon prior research by analyzing various demographic and clinical factors, including age, region, family history, sleeping patterns, and eating habits. These insights can aid in developing improved prevention and treatment strategies.

This study aims to analyze demographic trends and clinical characteristics of pancreatitis patients while also examining its prevalence across different regions of India. It seeks to explore the role of dietary and lifestyle factors in the onset of the disease and compare the impact of alcohol-induced and Tropical Pancreatitis. Ultimately, the research aims to contribute to the development of improved prevention and treatment strategies for better disease management.

Material & Methods

A total 2050 cases were enrolled between January 1997 and November 2024.

Leading hospitals involved

All forms of pancreatitis were diagnosed at leading hospitals in India by subject experts. The data highlights patient distribution across Indian hospitals, led by AIG Hyderabad (312 patients), Sir Ganga Ram Hospital Delhi (93), Medanta Gurugram (80), AIIMS Delhi (62), PGI Lucknow (56), Fortis Delhi (52), ILBS Delhi (45), Apollo Delhi (40), Max Delhi (36), Global Hospital Mumbai (34), PGI Chandigarh (28), Dayanand Medical College Ludhiana (27), Pushpawati Singhania Delhi (22), Deenanath Mangeshkar Pune (18), SMS Jaipur (17), Shri Mahant Indiresh Dehradun (16), GB Pant Delhi (15), and CMC Vellore (12). Additionally, 1,085 patients were treated at various other hospitals across India and abroad.

Results

Demographical distribution

The patient demographics show that most patients belong to the Uttar Pradesh region in North India, with the next greatest proportion coming from Maharashtra, Gujarat, and Delhi, respectively (Table 1).

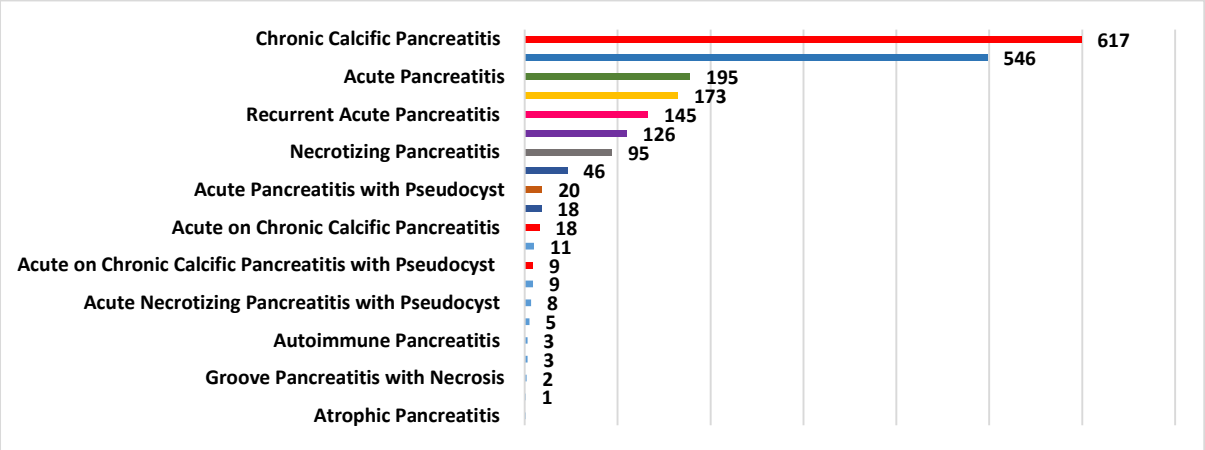
Table 1 Geographical distribution of enrolled patients (n=2050)

State	No. of Patients	State	No. of Patients	State	No. of Patients
Uttar Pradesh	391	Punjab	68	Jammu & Kashmir	19
Maharashtra	213	Telangana	65	Himachal Pradesh	14
Gujarat	136	Chhattisgarh	61	Tripura	5
Delhi	132	Bihar	53	Goa	4
Karnataka	127	Assam	44	Chandigarh	3
Haryana	126	Andhra Pradesh	31	Pondicherry	2
Uttarakhand	114	Tamil Nadu	31	Lakshadweep	1
Rajasthan	108	Odisha	29	Sikkim	1
Madhya Pradesh	107	Kerala	28	Meghalaya	1
West Bengal	69	Jharkhand	20	Overseas	47

Variants

Patients were enrolled and diagnosed with different variants of pancreatitis (Figure 1).

Figure 1: Different variants of pancreatitis among patients enrolled (n=2050)



Age and gender of patients

The participants, of both genders and ranging from 3 to 80 years old, were included in the study. The population comprises 83% males (1692) and 17% females (358). Age-wise, 75% are adults aged 19–45 years (1531), followed by 12% adolescents (11–18 years, 254), 10% older adults (>45 years, 199), and 3% children (<11 years, 66). The data highlights a predominantly male and adult demographic.

Dietary and Sleeping Patterns

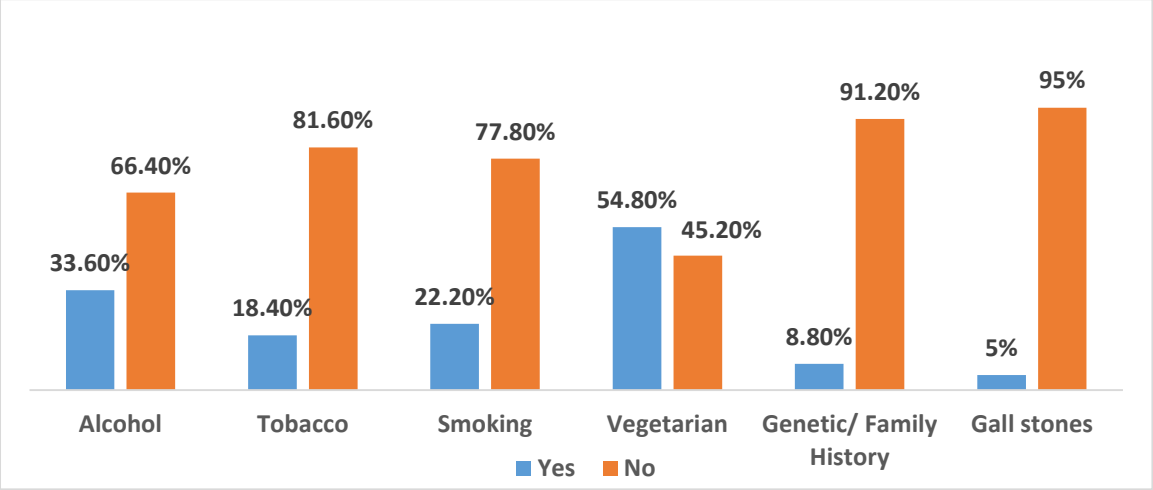
Among the 2,050 enrolled patients, the data show the following distribution of health-related factors among participants: 33.6% reported consuming alcohol, while 66.4% abstained. Tobacco use was confirmed by 18.4% of respondents, with 81.6% not using tobacco. Smoking was reported by 22.2% of participants, while 77.8% did not smoke. In terms of diet, 45.2% followed a non-vegetarian diet, while 54.8% did not. (Figure 2)

In the data collected, 52.3% of participants reported skipping meals, while 47.7% indicated that they do not skip meals. When it comes to sleeping patterns, a significant majority (92.5%) are late sleepers, while only 7.8% follow an early sleeping routine. These statistics highlight the predominant lifestyle habits related to meal skipping and sleep timing among the participants.

Genetic and Gallstone History

Among the enrolled, a small portion of participants, 8.8%, reported having a genetic or family history of health issues, while the majority, 91.2%, did not. Regarding gallstones, 5% of respondents indicated a history of the condition, while 95% had no such history. (Figure 2)

Figure 2: Eating habits, family history and presence of gall stones of enrolled patients (n=2050)



Professions-wise distribution

The data presents the occupational distribution of a sample size of 1,178 individuals. The largest group is composed of students, with 414 participants. Following this, 285 individuals are engaged in business, 209 in service sectors, and 194 in professional roles. A smaller proportion, 73 individuals, are housewives, and a minimal number, 3, are infants. This distribution highlights that students represent the majority of the sample, with business and service sectors also accounting for significant portions of the population.

DISCUSSION

Pancreatitis is a disease of the modern era, with a gradual global increase in its incidence. Between 1961 and 2016, there was a 3% annual growth in cases; from 1990 to 2021, new cases increased by 59%. While Western countries report gallstone and alcohol-induced pancreatitis, Asia sees more biliary causes with fewer alcohol-related cases. In India, especially in the southern states, pancreatitis has the highest incidence. However, previous analyses of 800 cases and the present study suggest that a significant number of pancreatitis patients are from northern India, emphasizing the need for a broader survey to understand

the full scope of the disease in India. Our findings align with previous observations indicating significant improvements in patients with pancreatitis following Ayurvedic treatment. (10,11)

The contemporary causes of pancreatitis are associated with gallstones, alcohol, hypertriglyceridemia, hypercalcemia, cystic fibrosis, genetic factors, autoimmune conditions, and certain drugs.(12) In the current and earlier studies, a greater number of cases of RACP (relapsing acute pancreatitis) were seen among non-alcoholics and non-smokers, similar to other studies where the term "idiopathic" has been used for non-alcoholic patients.

Stress has also been identified as a contributing factor, particularly its impact on Fibroblast Growth Factor 21 (FGF21), a stress hormone responsible for protection against cellular stress.(13) In this study, it is notable that the majority of patients enrolled were students, businesspeople, service professionals, and housewives, all of whom experienced moderate to severe stress. This provides new insight into the role of stress in the development of pancreatitis, warranting further research in this area.

Late nights and insufficient sleep also increase the risk of pancreatitis by disrupting the circadian rhythm.(14) Sleep deprivation causes oxidative stress in the pancreas, worsening inflammation.(15) Poor sleep also disrupts melatonin, which protects the pancreas by reducing inflammation, making it more vulnerable to damage.(16) Interestingly, in this study, the majority of enrolled patients had a habit of sleeping late or getting insufficient sleep.

In this context, the present study highlights the need for more surveys across different segments of society to enhance our understanding of the causes of pancreatitis. Given the rising incidence of pancreatitis, it is crucial to explore all potential causative factors thoroughly to reduce the disease burden.

Conclusion

This study highlights the need for a broader approach to address both the causes and potential cures for pancreatitis. Moving beyond conventional methods, we recommend incorporating alternative or integrative strategies that account for a wider range of factors influencing the disease. Such an approach could provide a more comprehensive understanding of the disease's etiology and contribute to more effective prevention and treatment strategies.

Recommendation

This study on the demography of pancreatitis patients at our hospital provides critical insights into disease patterns, aiding in targeted public health strategies, early intervention, and improved management approaches.

Limitation of the Study

This hospital-based study is based on a specific patient population. Larger multicenter studies with a more diverse sample are needed to validate and generalize the findings while establishing broader epidemiological trends. Additionally, long-term follow-up is required to confirm the observed associations.

Relevance of the Study

This study provides a comprehensive analysis of demographic and lifestyle factors influencing pancreatitis, including diet, alcohol, smoking, stress, and sleep patterns. It highlights the significance of non-alcoholic and idiopathic cases, especially in younger patients, and underscores the role of stress and circadian disruptions. These findings offer insights for improved prevention and treatment strategies.

Authors Contribution

All authors have contributed equally.

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Nil

Conflict of Interest

There are no conflicts of interest.

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openness, and support have been invaluable in gathering insights that may contribute to future advancements in the field.

Declaration Of Generative AI And AI Assisted Technologies In The Writing Process

During the preparation of this work, the authors used ChatGPT to assist in refining language, structuring content, and improving clarity. After utilizing this tool, the authors thoroughly reviewed and edited the content as needed and take full responsibility for the final publication.

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