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Research Article

ASSESSMENT OF RISK FACTORS ASSOCIATED WITH PANCREATITIS– A PROSPECTIVE CASE CONTROL STUDY

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Abstract

With this study we assess the risk factors responsible for developing pancreatitis in patients with both acute pancreatitis and chronic pancreatitis and objective of this study is prospective observational study in patients with both acute and chronic pancreatitis. We are taking the Study of dietary habits in pancreatitis patients and Assessment of various risk factors by providing individual scores to the patients for each risk factor. The current investigation was the prospective observational study. Approved by "Maharajah Institute of medical sciences", our study is to assess the risk factors of the pancreatitis, we are taking total of 82 patients were included in our study with Various risk factors such as age, gender, alcohol, smoking, gall stones, fatty food, added sugars, pancreatitic cancer and abdominal surgery were considered.Individuals were categorized into different groups to assess risk factors along with age and gender as they also play a role in the occurrence of pancreatitis. With this study we conclude a significant proportion of patients in the current study were found to be chronic alcoholics. The present study includes 82 members out of which 50.09% were found to have acute pancreatitis and 43.90% were found to have chronic pancreatitis. Gallstones, previous abdominal surgery, pancreatic cancer were found only in minor proportion of patients in the present study.

Keywords: Pancreatitis, Age, Observational Study, Risk Factors, Previous Abdominal Surgery.

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INTRODUCTION

1. PANCREATITIS

Pancreatitis is a disease in which the pancreas becomes inflamed. Pancreatic damage happens when the digestive enzymes are activated before they are released into the small intestine and begin attacking the pancreas . There are two forms of pancreatitis viz acute and chronic.

ACUTE PANCREATITIS (AP)

Acute pancreatitis is a sudden inflammation that lasts for a short time. It may range from mild discomfort to a severe, life-threatening illness. Most people with acute pancreatitis recover completely after getting the right treatment. In severe cases, acute pancreatitis can result in bleeding into the gland, serious tissue damage, infection, and cyst formation. Severe pancreatitis can also harm other vital organs such as the heart, lungs, and kidneys.

CHRONIC PANCREATITIS (CP)

Chronic pancreatitis is long lasting inflammation of the pancreas. It most often happens after an episode of acute pancreatitis .heavy alcohol drinking is another big cause .damage to the pancreas from heavy alcohol use may not cause symptoms for many years, but then the person may suddenly develop severe pancreatitis symptoms [1].

2. ETIOLOGY OF PANCREATITIS

a) **GALLSTONES**:

Gallstones (including microlithiasis) are the most common etiology of AP, accounting for at least 35-45% of cases. However, only 3 to 7% of patients with gallstones may develop into pancreatitis [2].

b. PANCREATIC/AMPULLARY OBSTRUCTION

Pancreatic and periampullary tumours can cause pancreatitis [3].

c. ALCOHOL

The prevalence of AP is approximately 4-fold higher among subjects who are alcohol consumers compared to non-alcholics. However, the absolute risk of developing alcohol-related pancreatitis is lower than that for chronic alcohol liver diseases and ranges from 5% to 10% for large consumers [3]. The risk of acute alcohol-induced pancreatitis increases in a dose-dependent manner, with a threshold for CP of approximately 4-5 drinks/day. Chronic alcoholic patients eventually develop CP after 10 to 20 years of continuous alcohol abuse [3].

d. SMOKING

It has been reported that smoking increases by approximately 2-fold the risk of non-gallstone-related AP, but not for gallstone-related pancreatitis.[4] This risk was higher in patients who consumed alcohol, current smokers and those with more than 20 packs per year . Regarding CP, smoking alone has been attributed 25% of the risk for this disease [4].

e. HYPERTRIGLYCERIDEMIA

Hypertriglyceridemia induces AP in about 1-4% of cases, and this is an uncommon etiology of CP [4].

3. EPIDEMIOLOGY

a. Incidence, Prevalence, and Trends

The annual incidence of AP ranges from 13 to 45/100,000 persons and of CP. ranges from 5 to 12/100,000; the prevalence of CP is about 50/100,000 persons [5]. There are also regional differences in demographic distributions; alcohol-related pancreatitis is more common in the West and Japan compared with other Asian countries, and there is wide variation in the prevalence of a form of CP that is endemic to tropical countries (20–125/100,000 persons reported in 2 parts of South India) [6].

b. Age and Sex:

Although equal proportions of men and women develop AP, CP is more common among men. The risk of AP progressively increases with age, whereas CP mainly affects middle-aged individuals. Age and sex distribution differ based on etiology [6].

c. Race:

The risk of pancreatitis is 2 to 3 fold higher among the black population than the white population, and rates of pancreatic cancer are considerably higher in the black population than in any other racial group, which is a disparity similar to that of lung cancer [6].

METHODOLOGY

AIM:

To assess the risk factors responsible for developing pancreatitis in patients with both acute pancreatitis and chronic pancreatitis.

OBJECTIVES

- Conducting a prospective observational study in patients with both acute and chronic pancreatitis.

- Study of dietary habits in pancreatitis patients.
- Assessment of various risk factors by providing individual scores to the patients for each risk factor.

STUDY DESIGN

The current investigation was the prospective observational study. Approved by "Maharajah Institute of medical sciences" ethical committee. The study was conducted in the gastroenterology department for a period of six months from october 2016 to march 2017.

SELECTION CRITERIA

Inclusion criteria

both male and female of age above 15 years.

Exclusion criteria

- children below 15years.
- Pregnant women.

STUDY PROCEDURE

The main objective of our study is to assess the risk factors of the pancreatitis. A total of 82 patients were included in our study. Various risk factors such as age, gender, alcohol, smoking, gall stones, fatty food, added sugars, pancreatitic cancer and abdominal surgery were considered.

DATA ANALYSIS

Individuals were categorized into different groups to assess risk factors along with age and gender as they also play a role in the occurrence of pancreatitis.

AGE

Risk of acute pancreatitis progressively increases with age; whereas chronic pancreatitis mainly affects middle aged individuals. Individuals with different age groups have been separated into 15 to 20 years, 21 to 30, 31 to 40, 41 to 50, 51 to 60 and 61 to 70.

GENDER

Equal proportions of men and women develop acute pancreatitis whereas chronic pancreatitis is more common among men. So the study includes both male and female patients. Individual scores were prepared for each patient by considering the following risk factors

1. **ALCOHOL:** Alcohol is of the significant risk factor for pancreatitis.[2]

Scores were allotted based on the frequency of intake as following.

Frequency	Score
≤ twice a week	0
3 to 4 times a week	1
Everyday	2

Patients with high frequency of intake such as everyday were given a score of 2 where as those with 3-4 times intake were given score 1.

2. **SMOKING:** Regarding chronic pancreatitis, smoking alone has been attributed 25% of the risk for this disease. Score were allotted based on the quantity of cigarettes they are smoking is as follows:

Quantity per day	Score
≤ 3cigarettes	0
3 to 10 cigarettes	1
≥ 10 cigarettes	2

p a tients who are smoking ≥ 10 cigarettes per day were given a score 2 where as those who smoke 3 to 10 cigarettes per day were given a score 1.

3. **GALL STONES:** Gall stones are most common etiology of acute pancreatitis accounting for at least 35-45% of cases. However, only 3to 7% of patients with gallstones develop pancreatitis. Scores were allotted based on presence or absence of this risk factor is as follows:

GALL STONE	SCORE
Absent	0
Present	2

A high score such as 2 was given for patients with gall stones.

4. **ABDOMINAL SURGERY:** The pancreatitis is a rare and self limited complication of abdominal vascular surgery. Scores were allotted based on the history of abdominal surgery is as follows:

ABDOMINAL SURGERY	SCORE
No	0

Yes	1

Score such as one was given for the patients who under gone abdominal surgery.

5. **PANCREATITIC CANCER:** Pancreatitic cancer has high impact on patients with chronic pancreatitis. A high score such as 2 was given for patients with pancreatitic cancer.

PANCREATITIC CANCER	SCORE
No	0
Yes	2

FATTY FOOD: Fatty foods trigger the risk of pancreatitis. It includes meet with skin, pork, beef, chicken, fried foods, breads etc. Scores were allotted based on the frequency of intake is as follows:

FREQUENCY	SCORE
< 2 times a week	0
2 to 3 times a week	1
Every day	2

Patients with high frequency of intake of fatty foods such as every day were given a score 2. Similarly score 1 was given for those who takes fatty food 2 to 3 times per week.

6. **ADDED SUGARS:** Added sugars that includes drinks, cakes etc. It is also a major risk factor for pancreatitis. Scores were allotted based on frequency is as follows:

FREQUENCY	SCORE
<2 times a week	0
2 to 3times a week	1
Everyday	2

Patients with high frequency of intake of added sugars i.e. every day were allotted score 2 where as score 1 was given for those who take food containing added sugars 2 to3 times per week.Each risk factor was given a definite score and net scores of individual patients were calculated.

RESULTS

PANCREATITIS OBSERVED IN DIFFERENT AGE GROUPS

Table 01: Percentage of patients with pancreatitis divided into various age groups

Age(no. of patients)	Percentage (%)
<20years(3)	3.65%
21 to 30years(16)	19.51%
31 to 40years(36)	43.9%
41 to 50years(21)	25.6%
51 to 60years(3)	3.67%
61 to 70years(3)	3.67%

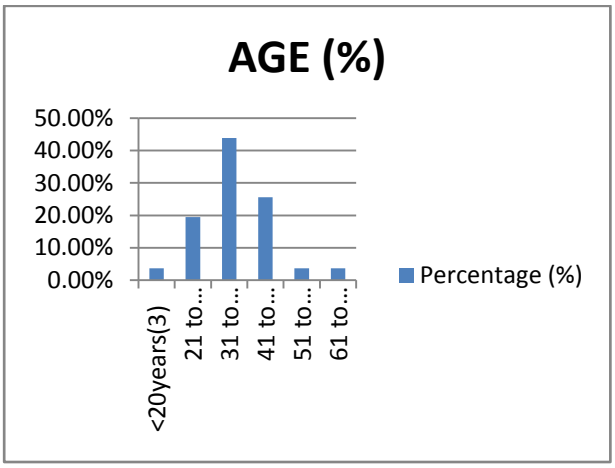


Figure 01: Percentage of patients with pancreatitis divided into various age groups

MALE AND FEMALE PATIENTS WITH PANCREATITIS

Table 02: Percentage of male and female with pancreatitis.

Gender(no. of people)	Percentage (%)
Female(8)	9.80%
Male(74)	90.20%

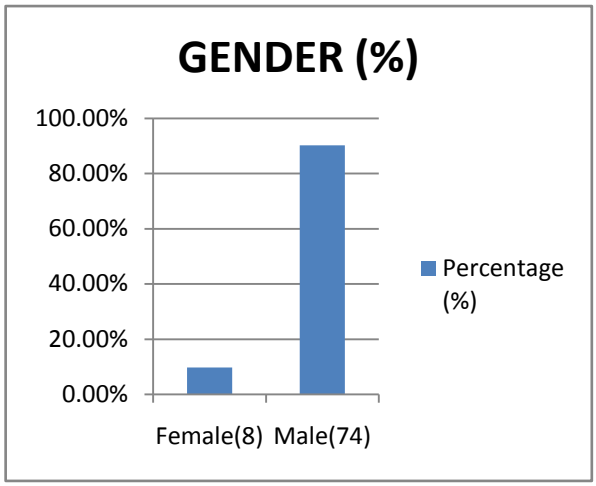


Figure 02: Percentage of male and female with pancreatitis.

ACUTE AND CHRONIC PANCREATITIS PATIENTS IN BOTH MALE AND FEMALE.

Table 03: Percentage of male and female patients with different stages of pancreatitis.

Stages of pancreatitis	Acute pancreatitis	Chronic pancreatitis
Male	87.23%	94.29%
Female	12.77%	5.71%

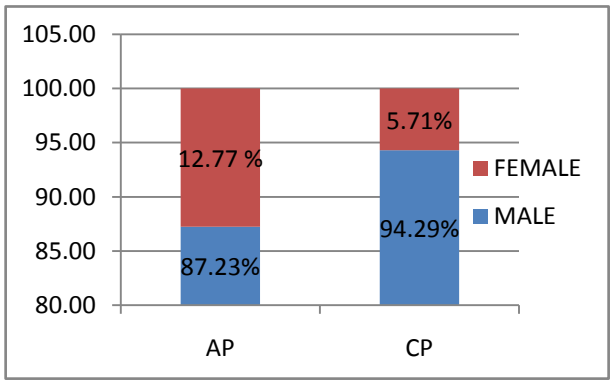


Figure 03: Percentage of male and female patients with different stages of pancreatitis.

ALCOHOLIC INTAKE IN PANCREATITIS PATIENTS.

Table 04: Percentage of patients with different patterns of alcohol intake.

Alcohol(no. of patients)	Percentage (%)
≤ twice a week(28)	34.15%
3 to 4 times a week(10)	12.19%
Every day(44)	53.66%

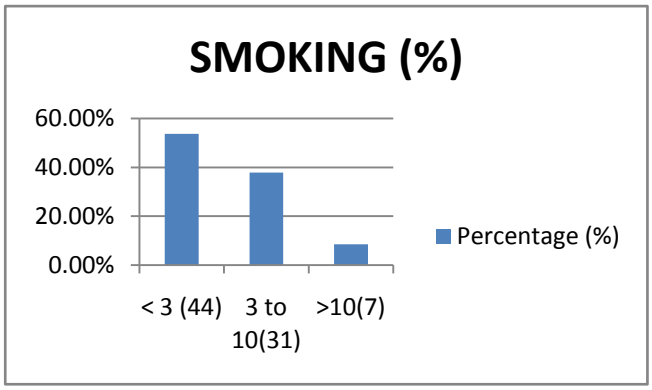


Figure 04: Percentage of patients with different patterns of alcohol intake.

SMOKING COMPLICATION IN PANCREATITIS PATIENTS.

Table 05: Percentage of patients with cigarette consumption per day.

No. of cigarettes/day	Percentage (%)
< 3 (44)	53.66%
3 to 10(31)	37.80%
>10(7)	8.54%

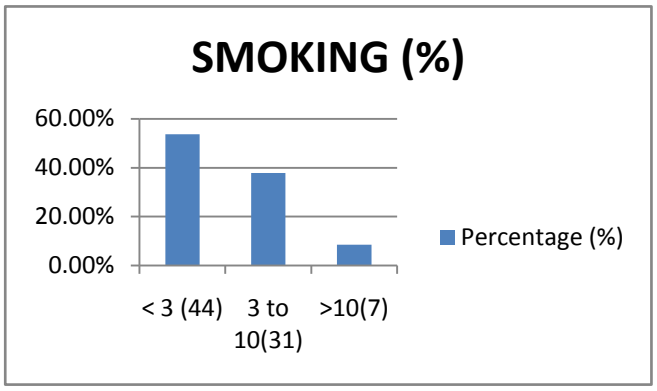


Figure 05: Percentage of patients with cigarette consumption per day.

PREVALENCE OF GALLSTONES IN PANCREATITIS PATIENTS

Table 6: Percentage of patients with and without gallstones.

Gallstones(no. of patients)	Percentage (%)
Yes(12)	14.33%
No(70)	85.36%

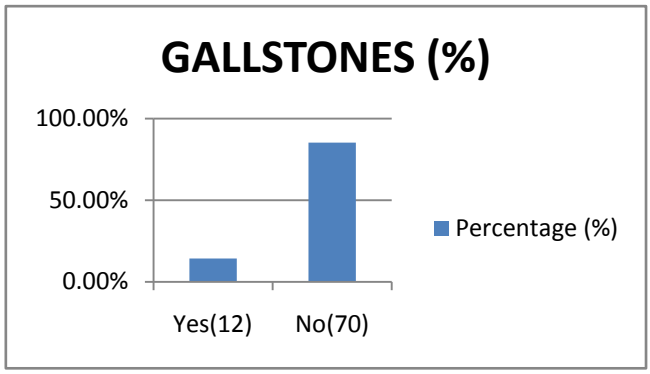
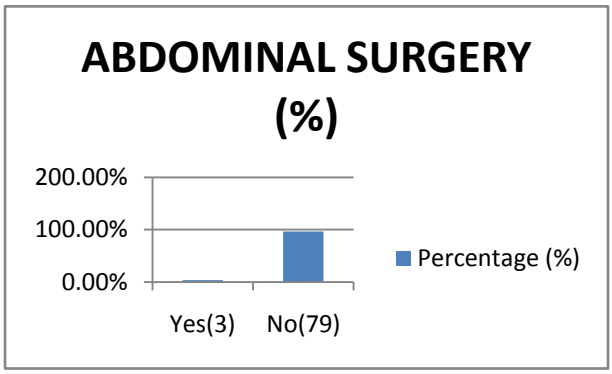


Figure 6: Percentage of patients with and without gallstones.



PATIENTS UNDERGONE ABDOMINAL SURGERY.

Table 07: Percentage of patients with and without abdominal surgery.

Abdominal surgery(no. of patients)	Percentage (%)
Yes(3)	3.66%
No(79)	96.34%

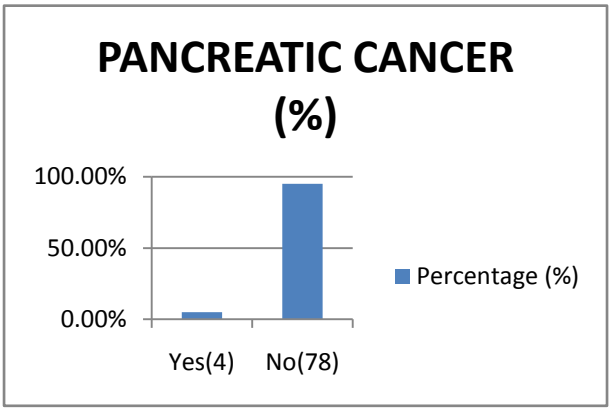


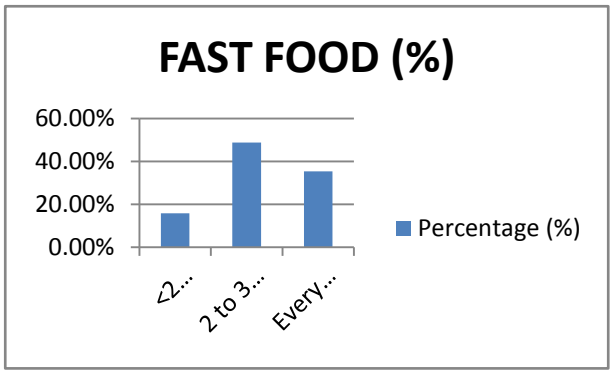
Figure 07: Percentage of patients with and without abdominal surgery.

PATIENTS WITH PANCREATIC CANCER.

Table 08: Percentage of patients with and without pancreatic cancer.

Pancreatic cancer(no. of patients)	Percentage (%)
Yes(4)	4.88%
No(78)	95.12%

Fig 08: Percentage of patients with and without pancreatic cancer.



PATIENTS CONSUMING FAST FOODS.

Table 09: Percentage of patients with different patterns of consuming fast food.

Fast food(no. of patients)	Percentage (%)
<2 times/week(13)	15.85%
2 to 3 times a week(40)	48.78%
Every day(29)	35.37%

Figure 09: Percentage of patients with different patterns of consuming fast food.

PATIENTS CONSUMING ADDED SUGARS.

Table10: Percentage of patients with different patterns of consuming added sugars.

Added sugars(no. of patients)	Percentage (%)
<2 times/week(66)	80.49%
2 to 3 times a week(14)	17.07%
Every day(2)	2.44%

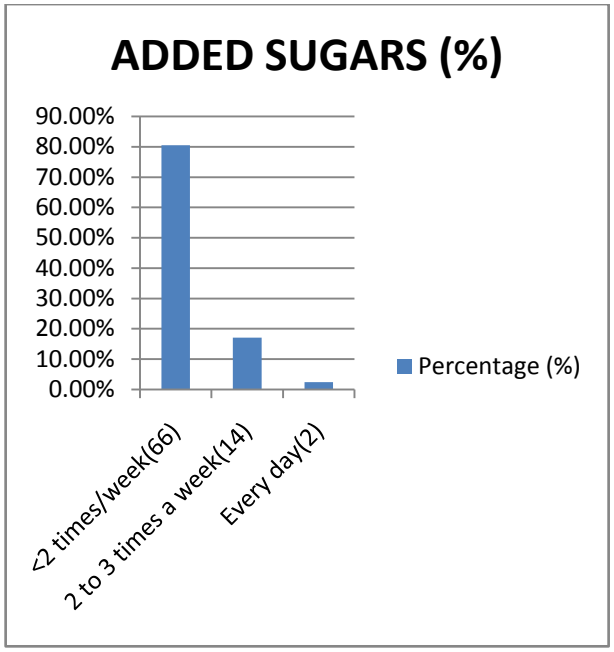


Figure 10: Percentage of patients with different patterns of consuming added sugars.

ASSESSMENT OF RISK SCORES

Table 11: Percentage of patients with different net scores.

Net scores	% of patients
<2(5)	6.1%
2 to 5(64)	78.05%
6 to 9(13)	15.85%

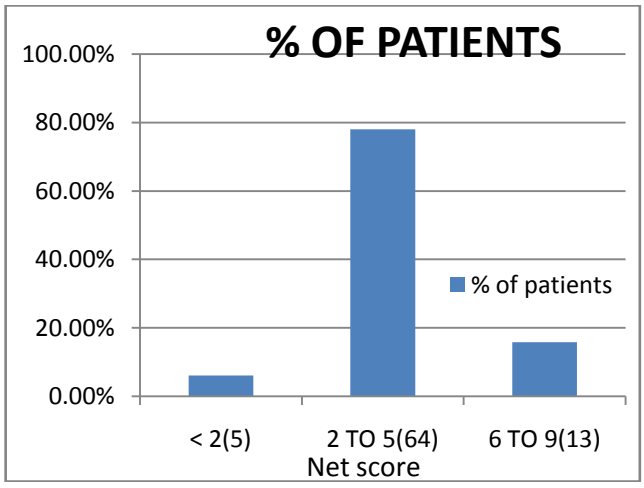


Figure 11: Percentage of patients with different net scores.

DISCUSSION

Pancreatitis is the inflammation of pancreas. If digestive enzymes in pancreatic juice become active before leaving the pancreas, they can begin to digest the organ itself (auto digestion) causing pancreatitis. Several things can increase the risk of pancreatitis such as alcohol, smoking, gall stones, etc. The present study includes 82 members out of which 50.09% were found to have acute pancreatitis and 43.90% were found to have chronic pancreatitis. Risk of acute pancreatitis progressively increases with age, whereas chronic pancreatitis mainly affects middle aged individuals. Patients with the age from 15 to 70 were included in the study. 3.65% were in the range of 21 to 30 years, 43.9% in 31 to 40 years, 25.6% in 41 to 50 years, 3.67% in 51 to 60 years and 3.67% in 61 to70 years. Equal proportions of men and women develop AP whereas CP is more common among men. Proportions of male and female were observed as 90.24% and 9.76% respectively. 87.23% male and 12.77% female patients were found with acute pancreatitis whereas 94.29% males and 5.71% females were with chronic pancreatitis. The frequency of intake of alcohol was observed among the patients. A high proportion of patients such as 53.66% are taking alcohol everyday whereas 12.19% and 34.15% of patients are consuming alcohol three to four times and ≤ twice a week respectively. The quantity of cigarette smoking per day was observed among the patients. 8.54% of patients were found to smoke >10 cigarettes per day while 37.80% and 53.66% of patients were smoking 3 to 10 and ≤ 3 cigarettes per day respectively. 14.63% of observed population were found to have concomitant gall stones and 3.66% were under gone abdominal surgery. Pancreatitis neoplasm was observed in 4.88% of patients. The frequency of intake of fatty foods and added sugars was observed among the patient. 35.37% were observed with high intake of fatty foods daily. Similarly 48.78% and 15.85% patients were taking fatty foods 2 to 3 times and less than 2 times a week respectively. 2.44% of patients were taking the food containing added sugars daily, 17.07% and 80.49% were taking added sugars 2 to 3 times and <2 times a week respectively. The scores have been allotted to each patient based on the significance and presence of risk factors. The net score of the patients were divided into various groups ranging from 0 to 9. 6.1% were in the range less than 2, 78.05% were in the range 2 to 5 and 15.85% were in the range 6 to 9.

CONCLUSION

A significant proportion of patients in the current study were found to be chronic alcoholics. The risk of pancreatitis may increases by alcohol consumption. A small proportion of patients with smoking were found to be associated with pancreatitis. Smoking and alcohol are additional factors that may increase the risk of pancreatitis. Gallstones, previous abdominal surgery, pancreatic cancer were found only in minor proportion of patients in the present study. The current study observed in major proportion of male patients related to female patients associated with AP and CP. Gender may also play an important role in the incidence of pancreatitis. A high proportion of patients were found to be consuming fatty foods 2 to 3 times per week. Fatty food may increase the risk of pancreatitis. Most of the patients in the present study were observed to fall in 2 to 5 risk assessment score group where as a low proportion of patients were observed with score less than 2. the patients in the score group 2 to 5 were found to have multiple risk factors such as alcohol, fatty food intake and smoking which may effect the incidence of pancreatitis. Hence patients should be counselled to avoid the major risk factors such as alcohol consumption, fatty food intake and severe smoking.

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