

Original Research Article

## Epidemiology of Gallstone Disease: A Prospective Study of 50 Cases

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**Abstract:** Biliary diseases have been recognised since ancient times. The incidence of gallbladder disease is influenced by age, sex, and variety of cultural, ethnic and medical factors. Aim of this study was to study the epidemiology of gallstone disease in the patients presenting in surgery department. The present study included 50 patients admitted in the department of general surgery with diagnosis of cholelithiasis. A detailed history of the disease, symptoms & signs including history of economic status and menopausal history in females was recorded. Routine bedside tests, biochemical and radiological investigations were carried out. Details of the operative findings were recorded. The maximum number of cases (32%) was reported between 30-40 years of age. It was concluded that in the present study, the incidence of gallbladder disease was more common in the females. The incidence of jaundice was found to be equal in both sexes. Parity has definite relation to the incidence of biliary tract disease. Biliary tract disease was twice as common in premenopausal females. The biliary disease was more common in sedentary workers and middle/ upper class patients. The gallbladder disease was more common in sthenic and obese patients. Pain was the predominant symptom in 98% followed by dyspepsia, vomiting, fever and jaundice. 12% of the patients were jaundiced with deranged liver functions. 32% of patients with biliary tract disease had associated disease like diabetes, hypertension etc.

**Keywords:** Cholelithiasis, Cholecystitis, Vomiting, Dyspepsia, Cholecystectomy, Jaundice

### INTRODUCTION

Biliary diseases have been recognised since ancient times. The quantum of this disease entity can be gauged by the fact that 8% of the adult population in developed countries is afflicted by biliary disease making cholecystectomy the second most frequently performed abdominal operations and is exceeded in frequency only by appendicectomy [1].

The incidence of gallbladder disease is influenced by age, sex, and variety of cultural, ethnic and medical factors. The prevalence of the disease increases with increasing age [2]. Women of child bearing age have higher incidence than men of the same age.

Clinical presentation of biliary disease is as varied as the anatomical variations in its structure. Early symptoms may be vague and can be related to some derangements of digestion and thus the symptoms pertaining to cholelithiasis and cholecystitis are commonly overlooked. Patients may present with biliary colic, acute cholecystitis, chronic cholecystitis,

jaundice, cholangitis and rarely gallstone ileus. Some patients present with a symptom complex referred to as gallstone dyspepsia.

Johnson [3] divided this symptom complex into nine individual symptoms; flatulence, repeated belching, feeling of fullness after normal meals, inability to finish a normal sized meal as before, abdomen becomes blown out so that clothes have to be loosened, dyspepsia after meals, burning discomfort in epigastrium, heart burn, bitter fluid regurgitation in mouth, vomiting and nausea.

The cardinal symptom of cholelithiasis is the pain. Physical findings are present only during attack of pain. They include pain in right upper quadrant or epigastric tenderness to palpation and voluntary muscle guarding. The diagnosis is confirmed by ultrasonography of gallbladder which is highly sensitive and accurate test for diagnosis of gallbladder disease.

**AIMS & OBJECTIVES**

To study the epidemiology of gallstone disease in the patients presenting in surgery department

**MATERIAL & METHODS**

The present study included 50 patients admitted in the department of general surgery with diagnosis of cholelithiasis. A detailed history of disease, symptoms & signs including history of economic status and menopausal history in females was recorded. Routine bedside tests, biochemical and radiological investigations were carried out. Details of the operative findings were recorded.

**Investigations done**

Haemoglobin, bleeding time, clotting time, total leucocyte count, differential leucocyte count, complete urine analysis, blood urea, serum creatinine, fasting blood sugar, liver function tests, X-Ray chest, ECG and USG of hepatobiliary system.

**RESULTS**

The present study was conducted on 50 patients who were admitted with diagnosis of cholelithiasis & cholecystitis in surgery department to study the epidemiology of gallstone disease.

**Table 1: Age distribution**

AGE ( In years)	No. of cases	%age
0-10	-	-
11-20	2	4
21-30	7	14
31-40	16	32
41-50	12	24
51-60	10	20
>61	3	6
Total	50	100

Table 1 show that the maximum number of cases i.e. 32% was seen in 31-40 years of life, followed by 24% in 41-50 years. The number of cases above 60 years was only 3. The youngest patient who had gallbladder disease was 17 years of age. The oldest patient in the study was 65 years of age.

Average age of the patient in this study was 41 years. Highest incidence of biliary tract disease was seen in 3<sup>rd</sup> and 4<sup>th</sup> decade. Incidence of biliary tract disease was found to be low at the extremes of ages.

**Biliary disease cases in relation to sex**

The incidence of biliary disease was more common in females (84%) i.e. 42 out of 50 cases as compared to males (16%) i.e. 8 out of 50 cases, with female to male ratio of 5.2: 1.

The various occupations of the patients have been categorised under two heads according to the

degree of physical activity e.g. sedentary group and labouring group.

**Table 2: Occupation and biliary disease**

Nature of work	No. of cases	%age
Sedentary workers	43	86
Labouring class	7	14
Total	50	100

Table 2 shows that the biliary tract disease was six times more common in sedentary workers than labouring class.

**Economic status**

The patients who could afford most of the requirements of treatment were grouped in middle/ upper class and those who depended mostly on hospital resources were classed as poor. No. of cases belonging to poor class were 16 out of 50 i.e. 32% and no. of cases of middle class were 34 out of 50 i.e. 68%. So, biliary tract disease was nearly twice as common (2.1:1) in upper and middle class patients, as compared to those in the poor class.

**Physique**

Patients were categorised into asthenic, sthenic and obese according to their physique. Number of cases who were asthenic was 12/ 50 i.e. 24%. Number of cases who were sthenic was 22/ 50 i.e.44% and number of cases who were obese were 16/ 50 i.e. 32%. So, the biliary disease was more common in sthenic patients and obese patients. The number of sthenic patients (44%) was closely followed by obese patients (32%).

Biliary tract disease in relation to parity in females

**Table 3: Parity**

No. of issues	No. of cases	%age
1	4	9.5
2-4	30	71.4
5-6	5	11.9
>6	3	7.2

Table 3 shows that parity has a definite relation to gallbladder disease as 71.4% of cases had 2-4 issues while those having more than 6 children have lower incidence of 7.2%. So, maximum number of cases was reported in fertile age group.

**Relation of the study to menstrual status**

Number of cases who were pre-menopausal were 27 i.e. 64% and post-menopausal were 15 i.e. 36%. So, disease was more common in pre-menopausal females in this study.

**Symptom pattern of patients**

Pain was the commonest presentation and was present in 49/ 50 cases i.e. 98%, followed by dyspepsia which was present in 37/ 50 cases i.e. 74%, vomiting

was present in 14/ 50 cases i.e. 28%, fever was present in 8/ 50 cases i.e. 16% and jaundice was present in 6/ 50 cases i.e. 12%.

#### **Location of pain**

Majority of patients (40) had pain in right hypochondrium followed epigastrium in 8 of cases. Three cases had pain referred to left hypochondrium.

#### **Jaundice**

Jaundice was found more in male patients than in females i.e. 5 out of 42 females had jaundice i.e. 11.2% as compared to 1 out of 8 male patients i.e. 12.5%.

#### **Associated diseases**

There were 3 cases of diabetes mellitus, 9 cases of hypertension, 4 cases of UTI, 1 case of T.B, 1 case of right ureteric stone, while 35 cases had no associated disease. So, although the biliary tract disease cases were seen commonly associated with diseases like diabetes mellitus and hypertension, definite inference could not be drawn because of less number of cases in each category of associated disease.

#### **USG findings**

Most of the cases, i.e. 90% (45/50), had normal intrahepatic biliary canaliculi & hepatic ducts whereas only 10% (i.e. 5/50) had dilated ones. Gallbladder wall was thickened in 72% (i.e. 36/ 50) of cases. Common bile duct stones were found in 10% (5/ 50) of cases.

#### **Biochemical investigations**

Out of 50 cases studied, 12 % cases (6/ 50) had raised serum bilirubin followed by 10% (5/ 50) cases of raised S. AlkPo<sub>4</sub>. Only 4% cases (2/ 50) had raised SGOT/ SGPT.

#### **Disease pattern of patients**

Out of 50 patients, 41 had chronic cholecystitis and 4 had chronic cholecystitis with choledocholithiasis, accounting for 90% of total number of patients. Only 1 patient in this study had acute cholecystitis. Among the other 4 patients, 3 had mucocele of gallbladder and 1 had cholecystoduodenal fistula.

#### **DISCUSSION**

The present study was carried out on 50 patients of biliary tract disease who were admitted and operated for gallstone disease. Aim was to study the epidemiology of the gallstone disease in these patients.

#### **Age**

Though the concept of gallstone as a disease of advanced age prevails but in the present study, disease occurred in relatively younger patients, fifty percent of whom were between 11-40 years while 24% were between 41-50 years and 4% were between 11-20 years

as also reported by Kotwal and Rinchen [4]. They observed that prevalence of gallstone disease increased with age in both sexes reaching a maximum in the third decade in men and fourth decade in women.

No case was seen in 0-10 years as also reported by Siedler and Barkley [5]. Average age of the patients with biliary calculi in the present study was 41 years. This closely approximates with the report of Tyagi *et al* [6].

The following factors may be responsible for the disease being common in younger age group in the present study:

1. Short span of life in our country
2. Early marriage
3. Early puberty due to tropical climate
4. Multiple pregnancies

#### **Sex**

Kotwal and Rinchen [4], emphasized on increased frequency of the disease in young women in the age group of 20-40 years. The ratio of female to male in the present study was 5.2: 1. The same incidence has been reported by Orr [7].

#### **Occupation**

In the present study, the disease was more common in sedentary patients. This is in conformity with the view held by Rains [8]. The higher incidence of gallstone formation in the sedentary patients may be due to the fact that gallbladder never empties completely as in active persons. Changing position and tone of gallbladder are conducive to good mixing thereby leading to decreased tendency for gallstone formation.

#### **Economic Status**

The biliary disease was more common (70%) in middle/ upper class patients as compared to poor patients (30%). The reasons for increased incidence of the disease in the middle/ upper class are sedentary life and dietary habits.

#### **Physique**

Gupta [9] found that 70% and Kotwal [4] found that 73% patients were of normal built. In the present study also, 68% were asthenic or sthenic in built and only 32% were obese.

#### **Parity**

Biliary calculus disease was more common (71.4%) in the females having 2-4 children. The incidence of the disease increased from 9.5% in patients with one issue to 71.4% with four issues. It was followed by a fall in the incidence to 11.9% with 5-6 issues and 7.2% with more than six issues. From the above observations it can be inferred that incidence of the disease increases in early life with increase in

number of children but among the older women, a reversal takes place.

Similar findings were noted by Tyagi *et al* [6] who stated that upto the age of 50 years, the incidence of gallstones increase with parity but among the old women, reversal takes place.

#### **Menstrual Status**

Premenopausal women comprised the major group (64%) followed by the postmenopausal (36%). It can safely be concluded that the incidence of the disease rises during the reproductive age of women and falls inversely after menopause.

#### **Symptom Pattern of Patients**

##### ***Pain***

In the present study, 98% patients presented with pain abdomen. In 80% of patients, it started in right hypochondrium while in 16% in epigastrium and in the rest in left hypochondrium. Commonest type of pain was intermittent and colicky. Incidence of pain abdomen in the present study was quite similar to Demarco *et al* [10] - 95%.

##### ***Vomiting***

The incidence of vomiting (28%) in present study is quite comparable to that of Baig *et al* [11] - 22.5%.

##### ***Dyspepsia***

Incidence of dyspepsia in the present series was 74% which is quite comparable to that of Baig *et al* [11]-77.5%.

##### ***Jaundice***

In the present study jaundice was obtained in 12% cases which is comparable to the incidence reported by Adams and Stranahan [12] - 18%.

##### ***Fever***

Incidence of fever was 10% while Bentley *et al* [13] observed the incidence of fever as 12%.

##### ***Associated Diseases***

In the present study the incidence of hypertension was 18%, diabetes mellitus was 6%, UTI was 8%, T.B was 2% and ureteric stone was 2%.

The incidence of associated diseases reported by Jayanthi [14] was hypertension 7.2%, diabetes mellitus 17.6%, T.B 7%.

##### ***USG Abdomen***

All the 50 cases were selected for study only after USG showed the presence of gallbladder disease. USG findings showed intrahepatic biliary canaliculi and hepatic ducts to be normal in 90% of cases and dilated in 10% of cases. This investigation also showed gallbladder to be distended in 6% cases, contracted in

60% of cases and thick walled in 72% of cases, stones in CBD in 10% of cases. The present study depicting findings of USG is quite comparable with Hessler *et al* [15].

#### **SUMMARY AND CONCLUSION**

50 patients admitted in general surgery department with diagnosis of gallbladder disease were investigated in detail after taking a thorough history of the symptoms and were subjected to surgery. Aim was to study the epidemiology of the gallstone disease in these patients.

The following conclusions were made:

1. The maximum number of cases (32%) was reported between 30-40 years of age.
2. The incidence was more common in the females as compared to males with the female: male ratio of 5.2: 1.
3. The age range of patients was 17-65 years with a mean age of 41 years.
4. The incidence of jaundice was found to be equal in both sexes.
5. Parity has definite relation to the incidence of biliary tract disease. Biliary disease increased with the number of issues upto 4 children after which there was fall in its incidence.
6. Biliary tract disease was twice as common in premenopausal females.
7. The biliary disease was more common in sedentary workers and middle/ upper class patients.
8. The gallbladder disease was more common in sthenic and obese patients.
9. Pain was the predominant symptom in 98% followed by dyspepsia, vomiting, fever and jaundice. 12% of patients were jaundiced with deranged liver functions.
10. 32% of patients with biliary tract disease had associated disease i.e. diabetes, hypertension etc.

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