

# Epidemiological Study of Acute and Chronic Cholecystitis in Patients who Undergone Cholecystectomy: The Original Article

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**Abstract:** Background: Cholecystitis is one of the most common diseases of the digestive system that can appear acute or chronic forms. Various factors are involved in causing this disease. The purpose of this study is to determine the prevalence of acute and chronic cholecystitis based on ages, sexes, and residential place. Methods: Patients had undergone surgery in Ali Abad Hospital during the first six months of 2018 (March- September) were included in this study. The collected data is analyzed by SPSS 16.0. The collected data, is presented as percentages, the mean and standard deviation in the form of tables and graphs. Results: In this study, 104 patients due to Cholelithiasis had undergone surgery were selected. One-tenth (9.6 percent) of the participants were male, and 90.4 percent female. Twenty-five percent of participants were younger than 40 years old and more than half (57.7 percent) are between 40-59 years old. One fifth (20.2%) of the participants were single and 79.8% are married. The prevalence of acute cholecystitis was 11.5%, the prevalence of chronic cholecystitis was 3.8% and the overall prevalence of cholecystitis was 15.4%. Prevalence of cholecystitis was greater among men, those are 60 years old or older, and those who were single, but these differences were not statistically significant. Conclusion: According to the results of this study, the prevalence of acute cholecystitis was higher than chronic cholecystitis. Its prevalence varied according to demographic characteristics but was not statistically significant, which may be due to insufficient sample size.

**Keywords:** cholecystitis, digestive tract, epidemiology, cholecystectomy

## 1. Introduction

Cholecystitis is a gallbladder inflammation that can be acute or chronic, usually caused by Cholelithiasis, and is one of the most common diseases in the digestive system. The disease can initiate with or without symptoms. Its relatively specific symptoms include, right upper quadrant pain, and nonspecific symptoms are nausea and vomiting (9). The prevalence of this disease is due to many factors such as age, sex, race, obesity, physical inactivity, pregnancy, Oral contraceptives, nutritional factors, hemolytic anemia, endocrine problems, hyperlipidemia, rapid weight loss (2 and 4). Cholelithiasis is the most common cause of acute Cholecystitis which is the most common cause of cholecystectomy operation. Acute Cholecystitis without stones could be made because of, severe burns, severe trauma, sepsis, and labor. Chronic cholecystitis is a common digestive system disorder caused by chronic inflammation of the cystic due to stones or other factors, as well as to mucosal changes it increase the thickness of the cystic wall.

There have been many studies of cholecystitis in different countries, which have shown prevalence and distribution of cholecystitis with different demographics characteristics, but in Afghanistan, especially in Kabul, such research has not been done or published. So we want to do our research according to on the prevalence and verity of prevalence based on age, sex, and inhabitancy location.

Gallbladder's diseases are more likely to manifest as Cholelithiasis or cystic carcinoma, and affecting 10 to 15 percent of the youth population. It is estimated that 20

percent of people older than 40 years old and 30 percent of people older than 70 years old have Cholelithiasis. At fertility, women have a ratio of one to four in men, while there is little difference in older people (9). Cholelithiasis are divided into two types of symptomatic and asymptomatic. Symptomatic Cholelithiasis is shown together with biliary colic, acute and chronic cholecystitis (2). Acute cholecystitis is called to the inflammation caused by biliary tract blockage by the stone. Chronic cholecystitis is caused by chronic cystic inflammation, which caused increases of the cystic thickness and conducts cystic carcinoma. Chronic cystic inflammation such as cystic fistula to intestine and typhoid bacillus-associated inflammation is associated with cystic carcinoma. Cystic carcinoma is the fifth most common cancer of the digestive system (8). And it has a survival rate of less than 5% over five years (6). The cholelithiasis is one of the major risk factors for cystic carcinoma in 85% of patients. According to research, the prevalence of chronic cholecystitis is higher than acute cholecystitis (1). A study conducted by Malekzadeh et al. At Amir al-Mominin Hospital in Zabol, Iran, showed patients with chronic cholecystectomy had a prevalence of 51.3% (5). Another study conducted by Khalaji and his colleagues at Hospital of Urmia, Iran, showed incidence of chronic cholecystitis was 69.8% (10).

## Research Questions

- 1) What is the prevalence of chronic biliary cholecystitis in patients with Cholelithiasis?
- 2) What is the distribution of acute and chronic cholecystitis according to demographic characteristics of cholecystectomy patients?

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Target:

The aim of this study is to determine the distribution of acute and chronic cholecystitis in patients with cholecystectomy and to investigate its distribution according to demographic characteristics.

## 2. Material and Method

This is a descriptive cross-sectional study was performed in the first six months of 2018(March- September)at Ali Abad Hospital-gastric Surgery ward. The patients, who participated in this study, were included through Consecutive Sampling method. Inclusion criteria in this study are patients who referred to Ali Abad hospital in the 2018 (March- September) and underwent cholecystectomy. Patients who suffering from cholecystitis but hadn't underwent surgery and those with incomplete cases, were excluded from the study. The main variables of this study were included age, sex, civil status, location of the residency, type of complication, the presence of stone, other diseases, and type of operation. The data were collected from pre-prepared checklists in patient's files. The collected data were analyzed by SPSS 16.0. The collected data, were presented as percentages, the mean and standard deviation in the form of tables and graphs.

2 \*2 table was used to check the relationship between variables. This research proposal has been approved by the Scientific Research Committee of Kabul University of Medical Sciences and all ethical principles of the research has been considered and the research has done according to these criteria.

## 3. Results

In this study, 104 patients who underwent cholecystectomy were evaluated. One-tenth (9.6 percent) of these patients were men. One quarter (25.0%) of these patients were under 40 years old, and more than half (57.7%) were between 40-59 years old. Also, One fifth (20.2%) were single (Table 1).

**Table 1:** Demographic characteristics of patients who underwent cholecystectomy

|                       | Number | Percentage |
|-----------------------|--------|------------|
| <b>Gender</b>         |        |            |
| male                  | 10     | 9.6        |
| female                | 94     | 90.4       |
| <b>Age</b>            |        |            |
| Below 40              | 26     | 25.0       |
| Between 40-59         | 60     | 57.7       |
| Older than 60         | 18     | 17.3       |
| <b>Marital Status</b> |        |            |
| single                | 21     | 20.2       |
| married               | 83     | 79.8       |
| <b>Total</b>          | 104    | 100.0      |

**Table 2:** Distribution of patients who underwent cholecystectomy according to their place of residence

| Place of residence | Number | Percentage |
|--------------------|--------|------------|
| Kabul              | 74     | 71.2       |
| Logar              | 2      | 1.9        |
| Parwan             | 2      | 1.9        |
| Ghazni             | 4      | 3.8        |
| Paktia             | 2      | 1.9        |
| Takhar             | 5      | 4.8        |
| Baghlan            | 6      | 5.8        |
| Badakhshan         | 1      | 1.0        |
| Kapisa             | 2      | 1.9        |
| Nangarhar          | 1      | 1.0        |
| Daikundi           | 1      | 1.0        |
| Kunduz             | 3      | 2.9        |
| Helmand            | 1      | 1.0        |
| Total              | 104    | 100.0      |

As the table above shows, it had been clear that the majority (71.2%) of these patients were resident of Kabul. Resident of Baghlan, Takhar and Ghazni provinces accounted for 5.8%, 4.8% and 3.8%, respectively (Table 2).

**Table 3:** Distribution of patients who underwent cholecystectomy by type of disease

| Type of disease                            | Number | Percentage |
|--|--------|------------|
| None                                       | 80     | 76.9       |
| Acute cholecystitis                        | 12     | 11.5       |
| Chronic cholecystitis                      | 4      | 3.8        |
| Cystic polyp                               | 2      | 1.9        |
| Jaundice caused by cystic duct obstruction | 3      | 2.9        |
| Hydrops                                    | 2      | 1.9        |
|  | 1      | 1.0        |
| Total                                      | 104    | 100.0      |

As the table above shows, it is found that about three-quarters (76.6%) of the patients mentioned above had no other disease. About 11.5 percent of them had acute cholecystitis and about 3.8 percent had chronic cholecystitis. Jaundice caused by cystic duct obstruction occurred in 2.9% of patients, cystic polyp in 1.9%, Hydrops in 1.9% and Stage Syndrome in 1% of the patients (Table 3).

**Table 4:** Distribution of patients undergoing cholecystectomy according to the presence of other disease

| Other disease | Number | Percentage |
|---------------|--------|------------|
| None          | 75     | 72.1       |
| Hypertension  | 20     | 19.2       |
| Bronchitis    | 5      | 4.8        |
| Diabetes      | 4      | 3.8        |
| Total         | 104    | 100.0      |

As the table above shows, approximately one-fifth of the patients had high blood pressure in addition to Cholelithiasis. Also, 4.8% of them had bronchitis and 3.8% had diabetes (Table 4).

**Table 5:** Distribution of patients underwent cholecystectomy according to disease and gender

| Gender | None   |            | Acute and chronic cholecystitis |            | Other disease |            |
|--------|--------|------------|---------------------------------|------------|---------------|------------|
|        | Number | Percentage | Number                          | Percentage | Number        | Percentage |
| Male   | 8      | 80.0       | 2                               | 20.0       | 0             | 0.0        |
| Female | 72     | 76.6       | 14                              | 14.9       | 8             | 8.5        |
| Total  | 80     | 76.9       | 16                              | 15.4       | 8             | 7.7        |

As the table above shows, one-fifth of men who had underwent cholecystectomy, had acute and chronic cholecystitis as well. While this was 14.9 in women who had

underwent cholecystectomy, but these differences were not statistically significant.

**Table 6:** Distribution of patients underwent cholecystectomy by type of according to disease and age

| Age             | None   |            | Acute and chronic cholecystitis |            | Other disease |            |
|-----------------|--------|------------|---------------------------------|------------|---------------|------------|
|                 | Number | Percentage | Number                          | Percentage | Number        | Percentage |
| Younger than 40 | 18     | 69.2       | 6                               | 23.1       | 2             | 7.7        |
| 40-59           | 49     | 81.7       | 5                               | 8.3        | 6             | 10.0       |
| 60 or older     | 13     | 72.2       | 5                               | 27.8       | 0             | 0.0        |
| Total           | 80     | 76.9       | 16                              | 15.4       | 8             | 7.7        |

Prevalence of cholecystitis was 23.1% in patients younger than 40 years, while 8.3% in patients aged 40-59 years, and it was 27.8% in patients 60 years older (Table 6).

**Table 7:** Distribution of patients undergoing cholecystectomy according to disease and civil status

| Civil status | None   |            | Acute and chronic cholecystitis |            | Other disease |            |
|--------------|--------|------------|---------------------------------|------------|---------------|------------|
|              | Number | Percentage | Number                          | Percentage | Number        | Percentage |
| Single       | 15     | 71.4       | 4                               | 19.0       | 2             | 9.5        |
| Married      | 65     | 78.3       | 12                              | 14.5       | 6             | 7.2        |
| Total        | 80     | 76.9       | 16                              | 15.4       | 8             | 7.7        |

As the table above shows, it is clear that the prevalence of cholecystitis was 19.0% in single patients and 14.5% for married patients (Table 7).

#### 4. Discussion

This study was done to find out the prevalence of acute and chronic cholecystitis among patients who had been undergone cholecystectomy surgery. The prevalence of acute cholecystitis was 11.5% and the prevalence of chronic cholecystitis was 3.8%. The overall prevalence of cholecystitis was 15.4%. Prevalence of cholecystitis was more among men, whose were 60 years or older, and those who were single, but these differences were not statistically significant.

As the majority of participants are female, and because of insufficient male amounts in this study than female amounts, the results of this study showed that the prevalence of cholecystitis in males is higher than females. A study that was done by Dr Nasser Khalaji and et al at Hospital of Urmia showed that the prevalence of cholecystitis was higher in females than in males and its reason was attributed to the physiology of the female body and hormonal factors (10).

The prevalence of cholecystitis in this study has raised with age. This issue may be related to the decrease of gallbladder's sensitivity to the cholecystokinin hormone, which is the main stimulating hormone of the gallbladder. As result it can diminish biliary secretions and bile formation and subsequently leads to cholecystitis (7). The

findings are consonant with the research done by Khalaji et al, and Melezkad (5 and 10).

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