



## **Clinical Pattern and Frequency of Co-morbidities among Patients Presented with Cholelithiasis' at Tertiary Care Hospital**

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### **Authors' contributions**

*This work was carried out in collaboration among all authors. Authors JM and SAS designed the study, wrote the protocol, and wrote the first draft of the manuscript. Authors MJ and ASM was given the supervision for manuscript writing and analysis. Author RJM contributed in data analysis. All authors read and approved the final manuscript.*

### **Article Information**

DOI: 10.9734/JPRI/2021/v33i1431276

#### Editor(s):

(1) Dr. Syed A. A. Rizvi, Nova Southeastern University, USA.

#### Reviewers:

(1) Sawsan M. Jabbar AL-Hasnawi, University of Kerbala, Iraq.

(2) Seyed Mohammad Ali Raisolsadat, Mashhad Islamic Azad University, Iran.

Complete Peer review History: <http://www.sdiarticle4.com/review-history/65103>

**Original Research Article**

**Received 22 November 2020**

**Accepted 29 January 2021**

**Published 22 March 2021**

### **ABSTRACT**

**Background:** Gallstone disease (cholelithiasis) remains the commonest medical issue leading to surgical intervention. Causes of the Gall stone has been not properly understood, but it is thought to have several factors. Untreated gall stones can cause the various complications like inflammation of gall bladder, tissue damage, gallbladder tears and infection.

**Objective:** To determine the clinical pattern and frequency of comorbidities among patients presented with cholelithiasis at Isra University Hospital Hyderabad, Pakistan.

**Materials and methods:** This cross-sectional study was conducted at general Surgery department, Isra University Hospital, Hyderabad. All the patients having diagnosis of gall stone disease, age>18 years and either of gender were included in the study. Patients were selected on outpatient department (OPD) basis. Complete clinical examination was done including abdominal ultrasound and required laboratory investigations. Data regarding demographic information including clinical presentational and comorbidities like diabetes, hypertension and obesity was

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recorded and also smoking status was assessed. All the data was recorded via study proforma and was analyzed by SPSS version 20.

**Results:** A total of 149 patients were studied, their mean age was 49.23±7.33 years. Females were commonest as 57(38.3%) and males were 92(61.7%). As per clinical presentation pain was found to be most common, particularly as epigastrium pain was found in (93.95%) cases, right Hypochondrium pain (73.82%), pain radiation was more towards scapula (50.33%), dyspepsia was noted in (49.66%), nausea was observed in 44 patients, flatulence in 45 patients and vomiting was least common (21.47%). Diabetes mellitus was 76(51.0%), hypertension was 67(45.0%), overweight were 63(42.3%), obese were 25(16.8%), HCV positive cases were 34(22.8%) and HBV positive cases were 09(59.7%). However smokers were 48(32.2%) and 06(4.0%) were alcohol consumers. Diabetes mellitus, hypertension and obesity were significantly more prevalent in females as compared to males ( $p<0.05$ ). Smoking habits and alcohol consumption were mostly found in males ( $p<0.05$ ). However HCV and HBV infections were statically insignificant according to gender.

**Conclusion:** It was concluded that gallstone is a common problem and most of the patients who were diagnosed with gallstones were females, obese (BMI>27kg/m<sup>2</sup>), diabetes mellitus and belonged to fourth decade (40 to 50 years) of their life. Commonest clinical presentations were epigastrium pain, right Hypochondrium pain, pain radiation towards scapula and dyspepsia.

*Keywords: Gallstone; co-morbidities; sign symptoms.*

## 1. INTRODUCTION

Gall stone disease is one of the most regular gastrointestinal diseases with the considerable burden to health care facilities. Gall stone can result in critical consequences, inclusive of acute gallstone pancreatitis and cancer of the gall bladder [1]. The prevalence of gallbladder stone disease varies broadly worldwide. There was a significant increase in cholelithiasis incidence inside the West for the duration of the beyond century.[2] Inside the USA the autopsy collection has proven gallstones in at least 20% of females and 8% of males fellows over the age of forty years.[2] It's miles expected that in the United States at least twenty million individuals have gallstones and that about one million new individuals of gall stone disease expand every 12 months.[2] However data from Pakistan still remains inadequate, however in a previous series has been demonstrated that the surgical incidence of cholelithiasis about 9.03% from southern Sindh region of Pakistan[3]. Predisposing risk factors of the cholelithiasis formation may be diabetes mellitus, estrogen and pregnancy, obesity, cirrhosis and hemolytic diseases. Cholelithiasis is appeared as a surgical ailment considering the fact that simplest a cholecystectomy is the treatment option. However by identifying and managing the possible risk factors it can be prevent by developing the preventive strategies [4]. For the gall stone formation advancing age and female gender are considered as non-modifiable risk factors [4]. As per national population bases

study from over 40 years aged individuals single, widow or separated cases were more involved in the gall stone disease as compared to married study subjects [5]. Several studies has been demonstrated that many independent factors as obesity, type II diabetes mellitus, body mass index , metabolic syndrome, hepatitis C virus and chronic kidney disease are linked to the gall stone formation [6]. There was a positive correlation of gall stone formation with elevated low-density lipoprotein (LDL), lower range of high-density lipoprotein (HDL) and elevated triglyceride levels.[7,8] However it can be protect by physical activities, as it decreased one's risk of the cholelithiasis formation.[7] Life style and diet also the responsible as diet westernization (increased fat), altered the composition of stone from pigment to cholesterol cholelithiasis.[7] Gall stones and other biliary tract diseases becoming highly prevalent with the increasing socioeconomic burden among developing nations including Pakistan. Cholelithiasis is the chronic and recurrent disease of hepatobiliary tract, and the disease causes may be the abnormalities of the cholesterol metabolism, bile acids and bilirubin, which can be characterized by the gallstones formation in common bile duct .hepatic bile duct or gallbladder. As per epidemiological studies diabetic individuals have a high risk of gall stone. However, only the few studies have been done at local level to establish the association so far. [9] No such studies has found regarding this objective. Therefore this study has been conducted to determine the clinical pattern and frequency of comorbidities

among patients presented with cholelithiasis at Isra University Hospital Hyderabad, Pakistan.

## 2. MATERIALS AND METHODS

This cross-sectional study was conducted at General Surgery ward (unit1 and unit 2), surgery OPD Isra university Hospital, Hyderabad. Study duration was one year from Nov 2016 to Oct 2017. Non probability purposive sampling was used. All the cases having cholelithiasis, age more than 18 years and either of gender presented in general surgery Out Patient Department (OPD) and who were admitted in the department for surgeries were included in the study. All the patients who were not agreeing for the participation in the study were excluded. Complete clinical examination was done including abdominal ultrasound and required laboratory investigations. Data regarding demographic information including clinical presentational and comorbidities like diabetes, hypertension and obesity was recorded and also smoking status was assessed. All the data was recorded via study proforma and was analyzed by SPSS version 20. Categorical variables like gender, commodities, residential status, SES and clinical features. Numerical variables like age of the patients and BMI were computed as mean and standard deviation.

## 3. RESULTS

A total of 149 patients were studied, their mean age was  $49.23 \pm 7.33$  years, minimum 37 years and maximum 65 years. Females were commonest as 57(38.3%) and males were 92(61.7%). Most of the study subjects 69(46.3%) had history of poor socioeconomic status followed by middle socioeconomic status 57(38.3%) and upper socioeconomic status 23(15.4%).(Table 1)

According to the clinical presentation most of the individuals (93.95%) had epigastrium pain in epigastrium followed by right Hypochondrium pain (73.82%), pain radiation was more towards scapula (50.33%), dyspepsia was (49.66%), nausea was observed in 44 patients and flatulence in 45 patients and vomiting was least common (21.47%). The most common examination finding was tenderness in right upper quadrant (79.86%) and positive murphy's sign (59.73), rest of patients had anemia, Hepatomegaly, jaundice and palpable gallbladder. (Table 2)

According to the frequency of co-morbidities, diabetes mellitus was 76(51.0%), hypertension was 67(45.0%), overweight were 63(42.3%), obese were 25(16.8%), HCV positive cases were 34(22.8%) and HBV positive cases were 09(59.7%). However smokers were 48(32.2%) and 06(4.0%) were alcohol consumers. (Table 3)

Diabetes mellitus, hypertension and obesity were significantly more prevalent in females as compared to males ( $p < 0.05$ ). Smoking habits and alcohol consumption were mostly found in males ( $p < 0.05$ ). However HCV and HBV infections were statically insignificant according to gender. (Table 4)

## 4. DISCUSSION

Gallbladder stone disease is common and a leading cause of inpatient admissions for gastrointestinal problems in modern world. [10] Old age, female gender and obesity are well-known risk factors of the cholelithiasis, while possible role of the type II diabetes mellitus (type-2 DM) is controversial. [11] In this study mean age was  $49.23 \pm 7.33$  years, minimum 37 years and maximum 65 years. Females were commonest as 57(38.3%) and males were 92(61.7%). Similarly Alizadeh AH et al [11] reported that the mean age of study subjects was  $57.6 \pm 19.2$  years, including males 170(42.5%) and females 230(57.5%). On other hand Ahmed W et al [12] also reported that among all study participants 17 (32.69%) were male and 35 (67.31%) patients were females.

In this study common presentation of patients with cholelithiasis was pain in epigastrium (93.95%), right Hypochondrium pain (73.82%), pain radiation was more towards scapula (50.33%), dyspepsia was (49.66%), nausea was observed in 44 patients, flatulence in 45 patients and vomiting was least common (21.47%). The most common examination findings were tenderness in right upper quadrant (79.86%) and positive murphy's sign (59.73). On the other hand Ahmed W et al [12] demonstrated that pain is the commonest symptom (82.69%), followed by vomiting and fat intolerance (57.69%), nausea and indigestion (42.30%), bloating (28.84%) and dyspepsia (25%). Amjad et al [13] also stated that the commonest clinical features were pain of the abdomen was 92%, followed by fever 32%, vomiting 38%, nausea 45%, jaundice 18%, and dyspepsia was 26%.

According to the frequency of co-morbidities, diabetes mellitus was 76(51.0%), hypertension was 67(45.0%), overweight were 63(42.3%), obese were 25(16.8%), HCV positive cases were 34(22.8%) and HBV positive cases were 09(59.7%). However smokers were 48(32.2%) and 06(4.0%) were alcohol consumers. On other hand in a study sated that the female gender, family history, fecundity, obesity, type 2 diabetes (DM) and hyperinsulinemia are important risk factors for development of gallstones. [14,15] Many other studies in literature shows that the cholelithiasis has strong association with multiple factors including female gender, elevated age, obesity, diet, parity and metabolic abnormalities lime diabetes and hyperlipidemia. [16,17] Obesity is another important risk factor for gallstone especially cholesterol stones, which is more in females as compared to males. Different epidemiological studies have found that the risk of gallstones in obesity is strongest in young women, and slimness is protective against gallstone formation. [16,18,19] About 60% of patients with gallstone were obese as observed by Ahmed et al [20] in their study. On the other hand Ahmed W et al [12] also stated that about 46.15% patients were overweight and 28.84%

were obese. The diabetics generally have high levels of triglycerides in blood which may increase the risk of gallstones. In addition, the Gallbladder function is also impaired in patients with diabetic neuropathy, and hyperglycemia regulation with insulin seems to be increase the lithogenic index. In this study many patients had HCV and HBV positive, on other hand Ahmed W et al. [12] also reported that about 28.84% of the patients their study was diabetic and 26.92% had liver disease.

**Table 1. Demographic characteristics of the patients n=149**

Variables	Statistics
Age	Mean±SD 49.23±7.33 years
	Minimum 35 years
	Maximum 65 years
Gender	Male 46(30.9%)
	Female 103(38.3%)
	Total 149(69.1%)
Socioeconomic status	Poor 69(46.3%)
	Middle 57(38.3%)
	Upper 23(15.4%)

**Table 2. Patients distribution according to clinical presentation n=149**

Variables	Statistics
Epigastrium pain	140(93.9%)
Right Hypochondrium pain	110(73.8%)
Pain radiation was more towards scapula	75(50.3%)
Dyspepsia	74(49.66%)
Nausea	44 (29.5%)
Flatulence	45 (30.2%)
Vomiting	32(21.4%).
Tenderness in right upper quadrant	119(79.8%)
Positive murphy's sign	89(59.7%)
Anemia	33(22.1%)
Hepatomegaly	09(59.7%)
Jaundice	08(5.4%)
Palpable gallbladder	06(4.0%)

**Table 3. Patients distribution according to comorbidities and smoking habits n=149**

Variables	Statistics
Diabetes mellitus	76(51.0%)
Hypertension	67(45.0%)
BMI	Normal 61(40.9%)
	Overweight 63(42.3%)
	Obese 25(16.8%)
HCV positive	34(22.8%)
HBV positive	09(59.7%)
Smoking	48(32.2%)
Alcohol consumption	06(4.0%)

**Table 4. Patients distribution according to comorbidities and smoking habits n=149**

Variables	Gender		Total	P-value
	Male	Female		
Diabetes mellitus	24	52	76	0.001
Hypertension	20	57	67	0.001
Overweight	33	55	88	0.046
HCV positive	15	19	34	0.652
HBV positive	03	06	09	0.874
Smoking	44	04	48	0.001
Alcohol consumption	06	00	06	0.001

## 5. CONCLUSION

It was concluded that gallstone is a common problem and most of the patients who were diagnosed with gallstones were females, obese (BMI>27kg/m<sup>2</sup>), diabetes mellitus and belonged to fourth decade (40 to 50 years) of their life. Commonest clinical presentations were epigastrium pain, right Hypochondrium pain, pain radiation towards scapula and dyspepsia. However anemia and jaundice were also found in some patients. People with gallstones from our study had low literacy level and they belonged to low socioeconomic status. Pre-planned management strategies should be developed for co-morbid patients to decrease the biliary pathologies.

## ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the authors.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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