

Prevalence of Gall Stones in Adult Population: A Clinical Study

Abhay Krishna^{1*}, Surendra Mehrotra²

¹Associate Professor, ²Assistant Professor, Department of General Surgery, Mayo Institute of Medical Sciences, Safedabad, Barabanki, Uttar Pradesh, India.

ABSTRACT

Background: Gall stones are common and it ranges from 10% to 20% of the world population. The present study aimed in estimating gall stones in adult population.

Materials & Methods: A total of 2250 subjects were examined in general surgery department in 2015. It included 1040 males and 1210 females. All subjects were subjected to ultrasonography of upper abdomen for the presence and absence of gall stones. Patients demographic data such age, sex, marital status, education level, employment status, physical activity and BMI was recorded.

Results: Gall stones were present in 63(6%) males and 170 (14%) females. Maximum patients were seen in 40-60 years age group (136/233) followed by >80 years age group (58) and 20-40 years age group (39). 21% of patients were either single/widow. 9% were married. The difference was significant. 19 patients were graduates and 26 were underintermediate. Employment status showed that 19 were employee, 17 were workers, 14 were retired from job and 38 were housekeeper. 33 were unemployed.

Conclusion: Author concluded that daily physical activity, female gender, increasing age and marital status play an important role in development of gall stones.

Key Words: Gall stones, Marital status, Ultrasonography.

*Correspondence to:

Dr. Abhay Krishna,
Associate Professor,
Department of General Surgery,
Mayo Institute of Medical Sciences,
Safedabad, Barabanki, Uttar Pradesh, India.

Article History:

Received: 29-01-2015, Revised: 17-06-2015, Accepted: 02-11-2016

Access this article online	
Website: www.ijmrp.com	Quick Response code 
DOI: 10.21276/ijmrp.2016.2.6.006	

INTRODUCTION

Gallstones are the solidifications that can occur in any portion of biliary tract, and when they accumulate in gallbladder they are defined as cholelithiasis. The complications associated with gallstone disease (GSD) such as cholecystitis, pancreatitis, and cholangitis have become significant public health issues imposing a great economic burden worldwide.¹

Cholelithiasis is common with the incidence ranging from 10% to 20% of the world population. Important geographical and racial variations have been observed by several workers in the incidence of cholelithiasis in various parts of the world. Differences exist between countries even in the continent of Europe: Kozoll, Dwyer, and Meyer (1959)² found much higher rates in Germany (32-6 %) and Sweden (19.6%) while Torvik and Hoivik (1960)³ reported an incidence rate of 19-5% in a necropsy series from Norway.

The incidence is four times higher in women than in men with high prevalence among younger age group. However, the true prevalence of the disease remains hard to derive as the majority of patients remain asymptomatic.⁴ The traditional risk factors for gallstone disease (GSD) are the four 'F's'- 'female, fat, forty and

fertile' - but age is additional risk factors in Western countries. Gallstone disease before 20 years of age is a rare occurrence. The increased incidence of gallstones with age is seen across all ethnic groups.⁵

Gallstones (GS) are seen in all age groups but the incidence increases with every decade of life and they were found to be most prevalent in 4th and 5th decade of life. Twenty to thirty percent of western people aged 65 and around 10% of non-western population same ages have been affected by gallstones.⁶ The availability of ultrasonography (US) as an accurate tool for gallstone diagnosis has allowed

the evaluation of gallstone prevalence by means of epidemiological surveys of the general population, both in Eastern and Western countries. Furthermore, these studies, as well as case-control studies, have allowed the identification of the factors most frequently associated with GD, i.e. increasing age, female sex, family history of GD, number of pregnancies, obesity, or type 2 diabetes.⁷

This study was conducted to estimate the prevalence of gall stones in population.

MATERIALS & METHODS

This study was conducted in the department of general surgery in 2015. A total of 2250 subjects were examined during this period. It included 1040 males and 1210 females. All subjects were subjected to ultrasonography of upper abdomen for the presence and absence of gall stones. Patients demographic data such age,

sex, marital status, education level, employment status, physical activity and BMI was recorded.

The collected data was entered computer and managed statistically using SPSS computer program version 21. Chi-square was used. P value less than 0.05 was considered significant.

Table I: Number Of Subjects With Gall Stones

TOTAL SCREENED - 2050			
GENDER	MALE	FEMALE	P VALUE
TOTAL	1040	1210	
GALL STONES	63	170	0.02
PERCENTAGE	6%	14%	

Table II: Distribution Of Patients In Different Age Groups

AGE GROUPS	MALE	FEMALE	TOTAL	PERCENTAGE	P VALUE
20-40	11	28	39	17%	0.01
40-60	34	102	136	58%	
>80	18	40	58	25%	
TOTAL	63	170	233	100	

Table III: Distribution Of Patients Based On Marital Status, Education Level And Employment Status

	MALE	FEMALE	TOTAL	P VALUE
MARITAL STATUS				
MARRIED	7	14	21 (9%)	0.02
SINGLE/WIDOW	13	37	50 (21%)	
EDUCATION LEVEL				
UNDERINTERMEDIATE	12	14	26 (11%)	0.1
GRADUATES	15	4	19 (8%)	
EMPLOYMENT STATUS				
EMPLOYEE	13	6	19 (8%)	0.01
WORKER	11	6	17 (7%)	
RETIRED	10	4	14 (6%)	
UNEMPLOYED	11	22	33 (14%)	
HOUSEKEEPER	13	15	38 (16%)	

Table IV: Patients On Basis Of Physical Activity And BMI

	MALE	FEMALE	TOTAL	P VALUE
PHYSICAL ACTIVITY				
DAILY ACTIVITY	10	4	14 (6%)	0.02
SEDENTARY	13	15	28 (12%)	
BMI				
OBESE	15	20	35 (15%)	0.01
NORMAL	8	11	19 (8%)	

RESULTS

Table I shows that total screened patients were 2050 which included 1040 males and 1210 females. Gall stones were present in 63(6%) males and 170 (14%) females. The difference was statistical significant.

Table II shows distribution of patients in different age groups. Maximum patients were seen in 40-60 years age group (136/233) followed by >80 years age group (58) and 20-40 years age group (39). The difference of distribution of gall stones patients in different age groups were statistical significant.

Table III shows that 21% of patients were either single/widow. 9% were married. The difference was significant. 19 patients were graduates and 26 were underintermediate. Employment status showed that 19 were employee, 17 were workers, 14 were retired from job and 38 were housekeeper. 33 were unemployed.

Table IV shows distribution of patients on the basis of physical activity and BMI level. 12% patients had sedentary life style while 14% were involved in daily physical activity. 15 % were obese while 8% were normal.

DISCUSSION

GD is a very common gastrointestinal disorder mainly in the Western world; although this disease has a low mortality rate, it's economic and health impact is significant due to its high morbidity. In fact, GD is one of the most common abdominal conditions for which patients are admitted to hospitals in developed countries. Knowledge of disease epidemiology is therefore crucial in managing this disorder, not only for planning preventive programs, but also for the identification of the best therapeutic strategy. Several US-based surveys have been carried out in Europe.⁸

This study was conducted in general surgery department in 2015. A total of 2050 patients were screened for the presence or absence of gall stones. Out of which, 233 were found positive. The percentage was 11.3%. The prevalence rates are slight higher than previous study of 2004; which indicated an occurrence rate of 9.03% (Channa, Khand, Bhangwer, & Leghari, 2004).⁹ However, it was quite low as compared to Italy (78%), Denmark (82.8%) and in southern Italy (87.7%).¹⁰

Gall stones were more seen in females as compared to males. This finding is consistent with the study of Chui CJ et al.¹¹ The difference is linked with the elevated levels of estrogen which is regarded as the primary sex hormone in female gender. The elevated levels enhance cholesterol excretion in bile which increases its saturation thereby leading to formation of cholesterol gallstone.

40-60 years age group showed more gall stones as compared to other age group. The finding is in agreement with the previous studies conducted by Chui CJ et al¹¹ and Western countries (Bortoff, Chen, Ott, Wolfman, & Routh, 2000).¹² The finding of correlation with increased age could be attributed to greater subjection to environmental risk factors.

The present study revealed that gall stones were seen mostly in single/widow, patients with low education level and unemployed.

The correlation of GD with marital status is indicated by few studies only. They explained by the fact that marrying in early ages prolongs females fertility period and increases parity rates. Consequently, female sex hormone can play crucial role in forming gallstones during fertile period.¹³

It was found that gall stones were seen mostly in patients with limited daily physical activity. The finding is consistent with results of other studies which also identified that increased physical activity greatly reduces risk of GD occurrence.

CONCLUSION

Author concluded that daily physical activity, female gender, increasing age and marital status play an important role in development of gall stones. However large scale studies should be done in future to substantiate the results obtained in this study.

REFERENCES

1. Abu-Eshy, S. A., Mahfouz, A. A., Badr, A., El Gamal, M. N., Al-Shehri, M. Y., Salati, M. I., & Rabie, M. E.. Prevalence and risk factors of gallstone disease in high altitude Saudi population. *East Mediterr Health J*, 2007;13: 794-802.

2. Kozoll, D. D., Dwyer, G., and Meyer, K. A. Pathologic correlation of gall-stones: a review of 1847 autopsies of patients with gall stones. *Arch. Surg.* 1959; 79:514-536.

3. Torvik, A., and Hoivik . Gallstones in an autopsy series. *Acta chir. scand.* 1960; 120:168-174.

4. Ansari-Moghaddam, A., Khorrarn, A., Miri-Bonjar, M., Mohammadi, M., & Hossein Ansari, H. The Prevalence and Risk Factors of Gallstone Among Adults in South-East of Iran: A Population-Based Study. *Global Journal of Health Science.* 2016; 8; 60-67.

5. Barkun, A. N., Barkun, J. S., Fried, G. M., Ghitulescu, G., Steinmetz, O., Pham, C., Goresky, C. A. Useful predictors of bile duct stones in patients undergoing laparoscopic cholecystectomy. *Ann Surg*, 1994; 220 32-39.

6. Misciagna G, Leoci C, Elba S, Petrucci J, Guerra V, Mossa A, Noviello M, Coviello A, Capece-Minutolo M, Giorgiot T. The epidemiology of cholelithiasis in southern Italy. *Eur J Gastroenterol Hepatol* 1994; 6: 937-941.

7. Chandran, A. P., Sivarajan, R., Srinivasan, V., Srinivas, M., & Jayanthi, V., . Risk profile for gallstone disease in southern Indian population: Is there anything new? *Indian J Gastroenterol.* 2014; 33:254-257.

8. Robertson, H. E., and Dochat, G. R. Pregnancy and gallstones: collective review. *Int. Obstet. Surg.* 1944; 78:193-204.

9. Channa, N. A., Khand, F. D., Bhangwer, M. I., & Leghari, M. H. (2004). Surgical incidence of cholelithiasis in hyderabad and adjoining areas (Pakistan). *Pak J Med Sci.* 2004; 20:13-17.

10. Channa, N. A., & Khand, F. Gallstones and dietary risk factors: An epidemiologic investigation in southern Sindh, Pakistan. *RMJ.* 2013; 38; 361-36.

11. Chiu CJ, Soon MS, Wu SS et al. The composition of gallstones in central Taiwan. *Gastroenterol J Taiwan.* 1996; 13: 311.

12. Bortoff, G. A., Chen, M. Y. M., Ott, D. J., Wolfman, N. T., & Routh, W. D. Gallbladder stones: Imaging and intervention. *Radiographs.* 2004; 20, 751-766.

13. Pundir CS, Chaudhary R, Rani K, Chandran P, Kumari M, Garg P; Chemical analysis of biliary calculi in Haryana. *Ind J Surg.* 2001; 63: 370-373.

Source of Support: Nil. **Conflict of Interest:** None Declared.

Copyright: © the author(s) and publisher. IJMRP is an official publication of Ibn Sina Academy of Medieval Medicine & Sciences, registered in 2001 under Indian Trusts Act, 1882.

This is an open access article distributed under the terms of the Creative Commons Attribution Non-commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

Cite this article as: Abhay Krishna, Surendra Mehrotra. Prevalence of Gall Stones in Adult Population: A Clinical Study. *Int J Med Res Prof.* 2016; 2 (6): 35- 37.

DOI: 10.21276/ijmrp.2016.2.6.006