International Journal of Reverse Pharmacology and Health Research (IJRPHR)

Research article

Lifestyle impact on Cholelithiasis (Pithapai kal) patients – A cross sectional study.

***Santhini N[1], Lakshmikantham T[2], Meenakumari R[3]**

[1*] PG Scholar, Department of Maruthuvam, [2] Associate Professor, Department of Maruthuvam,

[3] Director, National Institute of Siddha, Tambaram sanatorium, Chennai.

ABSTRACT

Introduction: Cholelithiasis is a disease which is quite prevalent in the society. Recent years have seen a dramatic change in the population distressed by this disease. Changes in the lifestyle, food habits i.e craving for fast food have resulted in a large number of population affected by this disease.

Aim&Objective: To assess the most common lifestyle factors that impact cholelithiasis *(Pithapai kal)* patients.

Methodology: The hospital based cross sectional study involving 75 Cholelithiasis study subjects were conducted at Ayothidoss Pandithar Hospital, National Institute of Siddha. In that study a questionnaire was used to obtain information about lifestyle factors from cholelithiasis subjects.

Result: The result showed that out of 75 study subjects 56% cases were female. Marital and Socio economic status, BMI, Physical activity, Food habits have a strong association with the disease with respect to p value<0.05.

Conclusion: The occurrence of Cholelithiasis may be due to physical inactivity and excessive intake of animal fat and fast food. In addition, women who are under Oral Contraceptive Pills were highly at risk of gallstone disease. Daily physical activity, intake of fibre rich vegetarian diet and avoiding fast food, etc., can be a preventive measure for gallstone disease.

.

Keywords:

Cholelithiasis, Life style impact, Diet, BMI, Siddha system, *Pithapai kal*.

Address for correspondence:

Santhini N

PG Scholar

CODEN : IJRPHR

To access this article online

Website : http://www.ijrphr.com/

DOI : 10.121/ijrphr/05.0101.523

Quick response code

INTRODUCTION

The Siddha medicine is a comprehensive system. Which is originated from Tamil Nadu. Generally 4448 types of diseases are classified in the Siddha system. This classification is mainly based on the derangement of 3 major humor, *vatham*, *pitham* and *kabam*[(1)]. Gall bladder (*Pitha pai*) is an organ which is existing in *pitha sthanam* in our body. Gallstone disease is caused by derangement of the humor *pitham*.

Gallstone disease is one of the most prevalent gastrointestinal disease. In India, the prevalence of gall stones is about 10–15% in adults. Usually this disease is of multi-factorial origin, with the interaction of both lifestyle and environmental factors. Most Common risk factors of cholelithiasis are obesity, lack of physical activity, ageing, dietary factors, hormonal (estrogen) therapy, associated with metabolic syndrome, liver disease like fatty liver and other co morbidities[(2)]. Gallstone is one among the lifestyle related diseases caused by the recent change in the dietary pattern. It can increase the prevalence of certain pathologies and also it alters the normal digestion process due to non-nutritive toxic constituent of the food and drinks.

MATERIALS AND METHODS

This is a Hospital based cross sectional study in which 75 patients of cholelithiasis who are registered in NIS OPD of This is a Hospital based cross sectional study in which 75 patients of cholelithiasis who are registered in NIS OPD of *Maruthuvam* were taken for the study with age above 13 years. After obtaining written consent, participants were interviewed using the pre-designed questionnaire for data regarding their lifestyle.

This study was carried out after obtaining IEC (Institutional Ethical Committee) (IEC No. NIS/IEC/2020/MP-6) of National Institute of Siddha, and registered in Clinical Trials in India (CTRI/2020/06/026003).

Individual data were simultaneously fed in MS excel sheet. After obtaining data from the study participants (75 patients), the frequency for each factor was obtained.

OBSERVATION & RESULTS

Factors assed in study participants

FACTORS	PREDOMINANT CATEGORY	PERCENTAGE
Age	30-39 40-49	28 27
Gender	Female	56
BMI	**Over weight** **Obesity**	**47** **28**
Food habit	**Non-veg**	**85.3**
Socioeconomic status	Lower middle Upper	53.3 40
Fast food intake	**Frequently intake**	**68**
Drinks	Tea	44
Physical activity	**Physically inactive**	**77.3**
Sleep	Disturbed	64
Menstrual history	OCP	45

DISCUSSION

Literature evidence from Davidson's principles and practice of Medicine states that females have a higher risk of developing gallstones[(3)]. In this current study among 75 participants, 42 female participants were affected which coincides with the above statement. Muhammad Bilal et al study was evident that the incidence of gallstones was greater in females in comparison with males[(4)].

Estrogens is regarded as the primary sex hormone in the female gender. The elevated levels enhance cholesterol excretion in bile which increases its saturation thereby leading to the formation of gallstone[(5)]. The correlation of marital status with gallstone formation is indicated by few studies only. A.D. Lions et.al. Study shows married women have the borderline risk of developing gallstones which is statistically significant. The current study has a strong association between marital status and gallstone formation. The fact marrying at an early age prolongs the female fertility period.

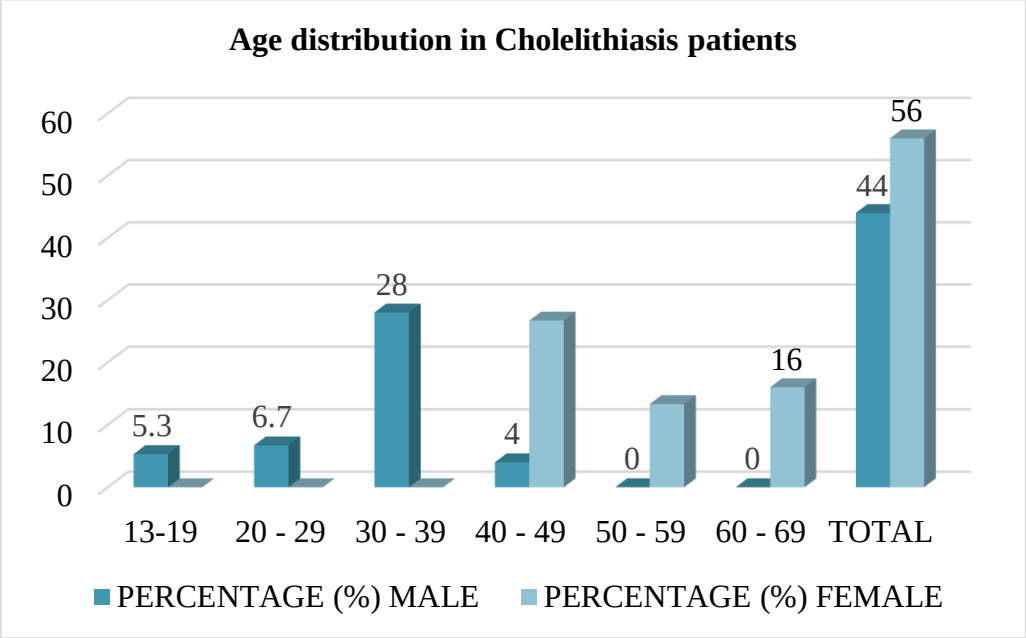


Figure 1: Age distribution in Cholelithiasis patients

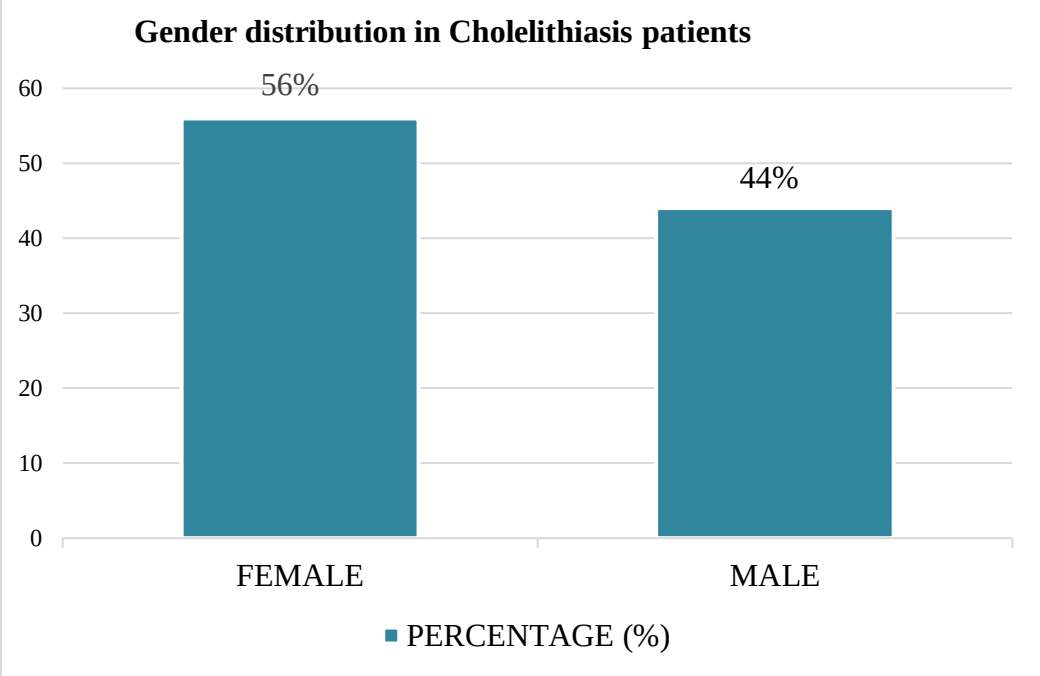
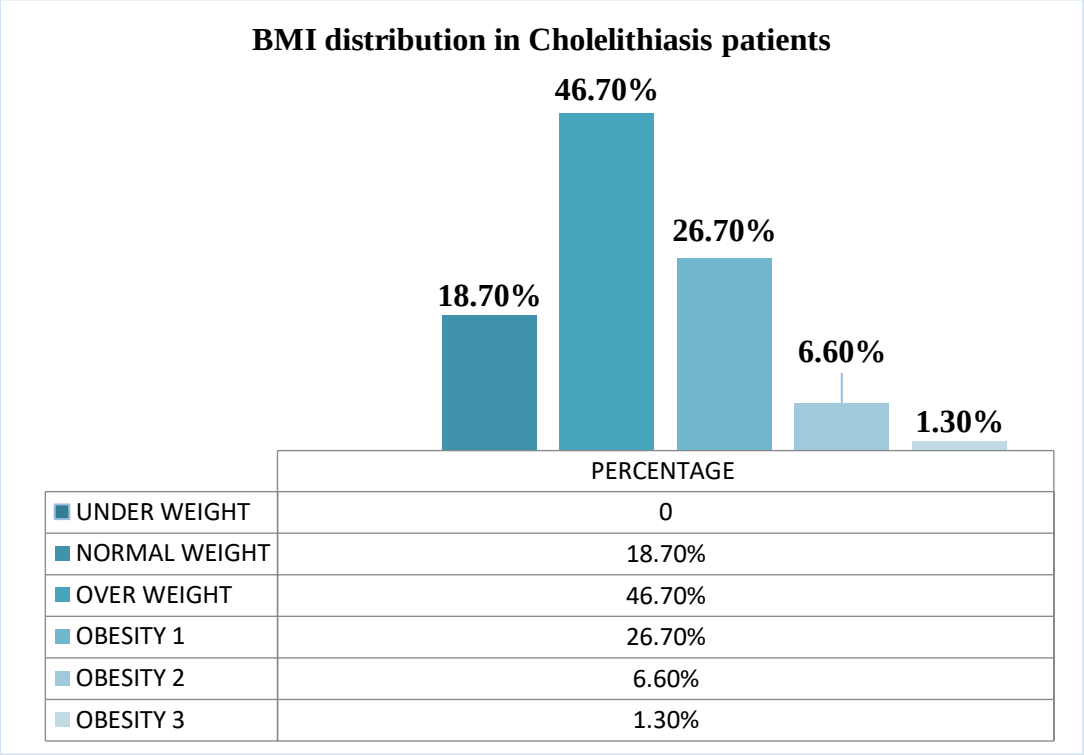


Figure 2: Gender distribution in Cholelithiasis patients



	PERCENTAGE
UNDER WEIGHT	0
NORMAL WEIGHT	18.70%
OVER WEIGHT	46.70%
OBESITY 1	26.70%
OBESITY 2	6.60%
OBESITY 3	1.30%

Figure 3: BMI distribution in Cholelithiasis patients

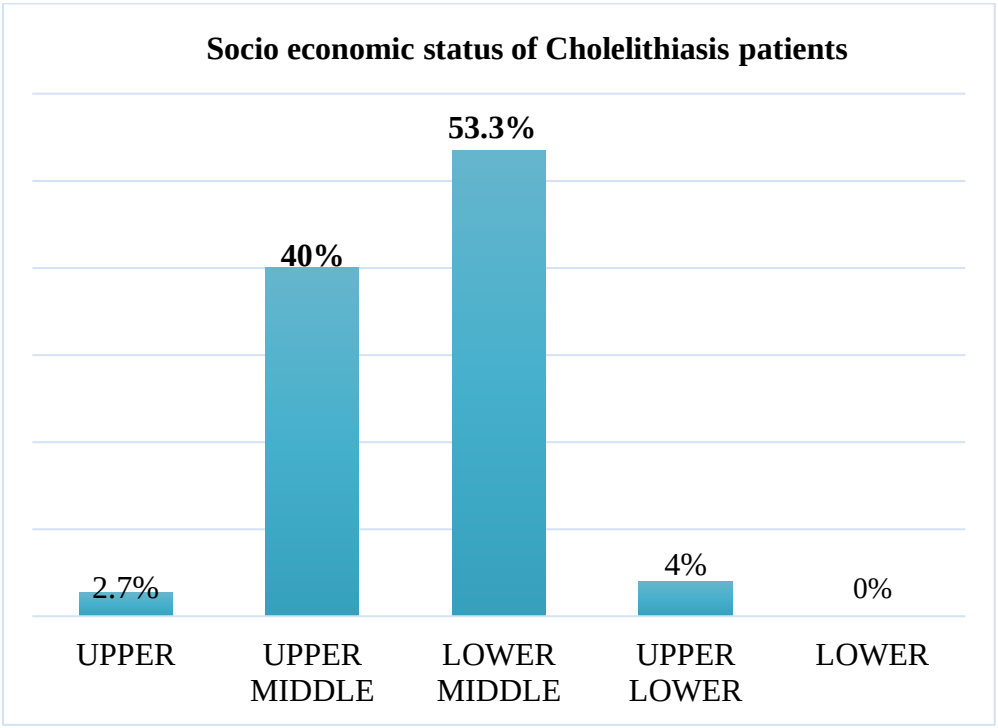


Figure 4 : Socio economic status of Cholelithiasis patients

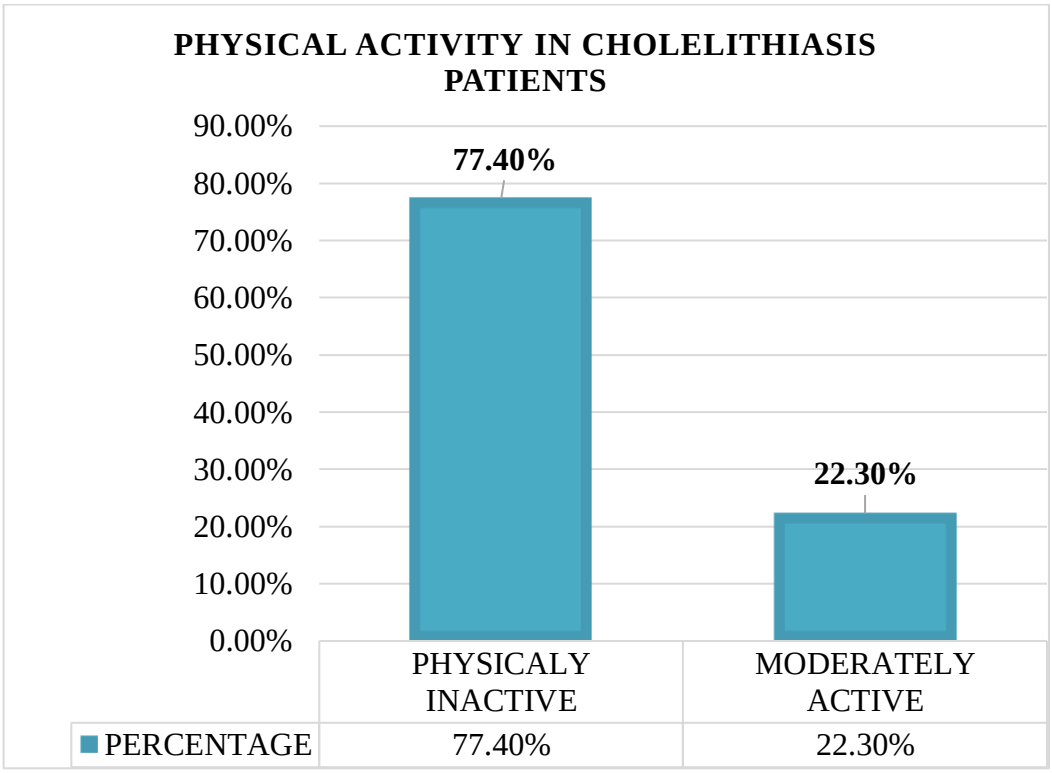


Figure 5: Physical activity status of Cholelithiasis patients

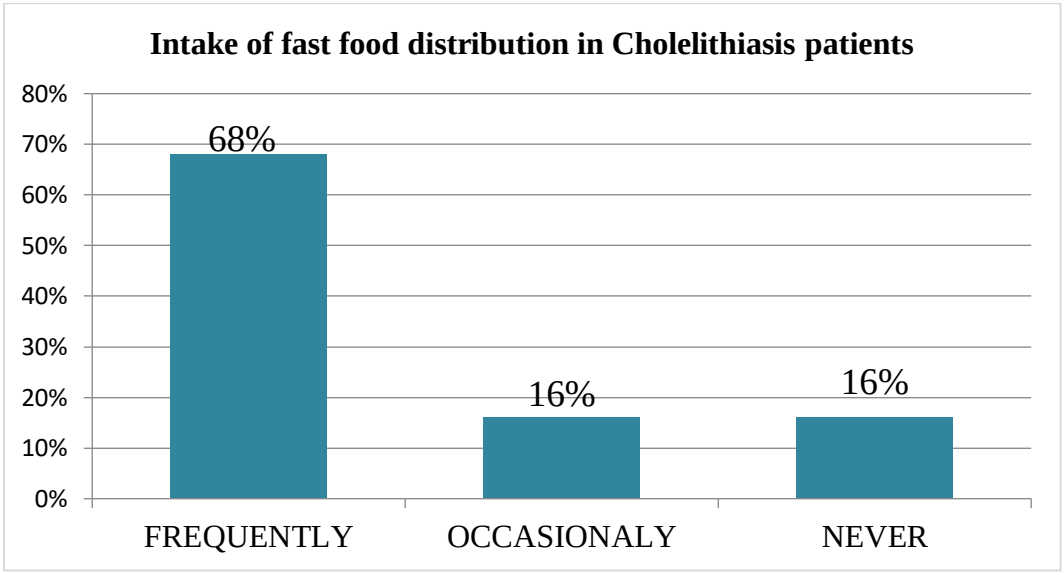


Figure 6 : Intake of fast food distribution in Cholelithiasis patients

Oestrogen plays a crucial role in forming gallstone during the fertile period[6]. But in few studies revealed that the risk in unmarried individuals was also three times higher than married ones[7].

Muhammad et al., study result showed all of their patients were from low socioeconomic status[8].This current study has strong association of gall stone with socio economic state[9] ($p \leq 0.005$). Here 53.3% were in Lower middle, 40% were Upper middle class.

The retrospective study by the Laws et,al. proved a strong association between gallstone and obesity[10]. In this current study BMI plays a major role on study participants 46.70 % of participants were found to be overweight and 26.70 % were in the obesity category. In obesity bile acid

pool and secretion is normal but increased biliary secretion of cholesterol.

Pang Y et al., study showed that routine physical activity may protect the risk of gall stone formation[11]. In this current study, 77 % of participants were observed to be physically inactive. Moreover, it was also identified that daily physical activity played an important role in preventing gallstone formation. The result was similar to another study conducted by Heanao et al, in which Physical activity helps to maintain the serum triglycerides level[12].

A retrospective study done by Louis et al. showed that patients with gall stones had a higher rate of Oral Contraceptive pill use[13]. Another Mahyaretminan et al, study showed a small statistically significant increase in the risk of gallbladder disease[14].

This current study has a great association with gall stone cases were taking Oral Contraceptive pill. Increased progesterone may lead to inhibition of the gall bladder contraction which leads to gall bladder hypo motility thus rending it to gallstone formation. Consumption of oral contraceptives lead to decreased bile salt secretion and decreased conversion of cholesterol to cholesterol esters[15].

A.D. Lions et al, study showed that there is no relationship between alcohol consumption and gallstone formation[6], this study has a similarity to the above result. Interestingly Leitzmannet et al, study found an increase in the amount of alcohol consumption was associated with a decreased risk of symptomatic gallstone disease[16].

Furthermore, the present study also observed that fatty liver patients had a greater prevalence of gallstone disease. The findings are similar to the previous Muhammad Bilal et al., study[4]. In fatty liver there is a build-up of lipids and triglycerides in hepatocytes, thereby initiating the inflammatory reaction. With the presence of a fatty liver gall bladder could not normally empty, which leads to precipitate gallstones.

The Current study results showed that animal fat food was significantly associated with gallstone disease. In addition risk of cholesterol gallstone was associated with fast food consumption. A high carbohydrate diet stimulates lipogenesis through the stimulation of the pentose phosphate pathway[15]. Intake of meat rich in saturated fatty acids decreases insulin sensitivity and caused gallbladder disease which leads to gall bladder dysmotility.

Mc Connell et al study shows a positive association between a vegetarian diet and symptomatic gallstone disease[17]. The healthy dietary pattern including high intake of vegetables, fruits, low dairy products was negatively associated with the risk of gallstone[18][21].

The current study shows that 85.3% were having animal fat food and 14.7% were taking a vegetarian diet.68%of study participants had a habit of frequently intake of fast food which contain more carbohydrates. High insulin response to high sugar consumption Hyperinsulinemia could increase the activity of HMG-Co A reductase, the rate-limiting enzyme in hepatic synthesis of cholesterol[15]

Recurrent intake of Chips & dairy products were associated with gallstone disease. Dietary cholesterol is derived exclusively from an animal source[19]. Cholesterol-rich foods are butter, milk, egg yolk on the other hand cholesterol is almost absent in vegetable fats. Excessive intake of fat foods increases the synthesis of triglyceride in the liver. The secretion of cholesterol from the liver to the bile is also accompanied by the excretion of bile salts this interference in the supply of the adequate amount of bile salts in bile may result in precipitation of cholesterol and formation of gallstones[15][22].

Sandeep et al., study showed Comorbid conditions such as hypertension, diabetes, and hyperlipidaemia were frequently found in cholelithiasis patients[23] but only hypertension was significantly associated with gallstones in the current study.

This current study showed that Diabetes and Fatty liver were frequently found in gallstone cases. Some studies revealed obesity with type 2 DM is a strong risk factor of gallstone than the patient's normal build with type 2 DM[24]. In diabetes there is increased mobilization of fatty acids to the liver (endogenous mobilization of fatty acids) from adipose tissue. In the current study among the study

participants it was also observed that 64% had disturbed sleep 36% had good to sleep.

STATISTICAL ANALYSIS

The Statistical Software Statistical Product and Service Solutions (SPSS) in be Use for the Analysis of the Data and Microsoft Word and Excel In Be Use to Figures and Tables.

CONCLUSION

Based on the results of the study it can be concluded that the female gender, lack of daily physical activity, over-consuming of animal fat, and fast foods play an important role in the occurrence of Gallstones. Additionally, women who are taking OCP are at high risk of developing gallstone disease. Intake of fibre-containing vegetarian diet and routine physical activity and avoiding fast foods prevent the occurrence of gall bladder stones. However, furthermore prospective studies must be carried out to understand the etiology involved in the unmodifiable risk factors. Additionally, further investigations and studies must be carried out to confirm the current identified demographical factors behind gallstone formation.

ACKNOWLEDGEMENT

I wish to thanks to Faculty in Department of *Maruthuvam*, National Institute of Siddha, Chennai-106.

CONFLICT OF INTEREST

None Declared

REFERENCES

1. Shanmugavelu M, Noinadal Noi mudhal Nadal Thiratu, Indian medicine Homeopathy dept, 4th edition; 2014.145p.
2. SayeedUnisa et al. Population-based study to estimate prevalence and determine risk factors of gallbladder disease in the rural Gangetic basic of North India, International Hepato-pancreato Biliary Association (HPB)(Oxford). 2011 Feb; 13(20); 117-125.
3. Davidson's principles and practice of Medicine, International edition, 23rd edition; 2018.902-909p.
4. Mohammad Bilal, Abdul haseeb,Muhamad chad,Mqadiha raza, Abida Ahamed, Vajikings snavas, Vanitha Mottina, The Prevalence and Risk factors of Gall stone among Adults in Karachi, South Pakistan: A Population – Based Study, Global Journal of Health Science; 2017;9(4).
5. Paracha, Parvez & Asif, Yasmin & Vriesekoop, Frank & Ullah, Shahid & Abbas, Muhammad & Paracha, Saima & Khan, TariqRisk factors associated with gallstone disease in Women, e SPEN Journal. June 2012; 7(3); 129- 134.
6. A D Lions ,Daras V, Linos DA, Kekis V, Tsoukas MM, Golematis V, Dietary and other Risk factors in the aetiology of cholelithiasis: A Case Control Study, HPB Surgery. 1989, Vol 1, 221-227.
7. Alireza Ansari –Moghaddam Ansari-Moghaddam A, Khorram A, Miri-Bonjar M, Mohammadi M, Ansari Het al., The Prevalence and Risk Factors of Gallstone Among Adults in South-East of Iran: A Population-Based Study. Glob J H health sci,. 2016 Apr; 8(4);60–67
8. Muhammad Naeem, Nasir Ali Rahimnajjad, Madiha Khurshid, Syed Mariam Shahid, Faiza Khawar & Molham Mustafa Najjar, Assessment of charteristics of patients with cholelithiasis from economically deprived rural Karachi, Pakistan, BMC Research notes. 28 june 2012;5;334.
9. Wani RT. Socioeconomic status scales-modified Kuppuswamy and Udai Pareekh's scale updated for 2019. J Family Med Prim Care.
10. Hou, Lifang & Shu, X. & Ji, Bu-Tian & Yang, Gong & Blair, Aaron & Zheng, Wei & Gao, Yu-Tang & Chow, Wong-Ho. (2004). BMI, physical activity and risk of gallstone disease in Chinese women. Annals of Epidemiology - ANN EPIDEMIOL. 14. 604-605. 10.1016/j.annepidem.2004.07.036..
11. Pang Y, Jun LV,Christiana Kartssonaki,Canking U,Yu Ku,Huyatong Du, Derrick Bennett, Zhang, Yiping Chen, Ling Yang, Yin Turnbul, Hao Wang, Wei Li, Michael V. Holmes, Junshi Chen, Zhengming Chen, Lyming Li Association of physical activity with risk of hepatobiliary diseases in China: a prospective cohort study of 0.5 million people. Br J Sports Med. 2021 Sep;55(18):1024-1033.
12. SantiagoHenao-Morá , Recreational physical activity is inversely associated with asymptomatic gallstones

in adult Mexican women.Annals of Hepatology. November–December 2014;13(6); 810-818

13. Louis H, Cholelithiasis in Adolescent Females its Connection with Obesity, parity, and Oral Contraceptive Use- A Retrospective Study of 31 Cases. Archives of Surgery. 1980.;15(1); 62-64,
14. MahyarEtminan et al. Oral contraceptive and risk of gallbladder disease; a comparative safety study.CMAJ. May 2011;183(8);17
15. AR Aroor, Medical Biochemistry.1st ed. JAPEE Brothers medical Publisher;2011.286-311p.
16. M F Leitzmannet, Giovannucci EL, Stampfer MJ,.prospective study of alcohol consumption patterns in relation to symptomatic gallstone disease in men, Alcohol ClinExp Res. 1999; 23;835–841. (PubMed)(Google Scholar)
17. Deitz DM, Standage BA, Pinson CW, McConnell DB, Krippaehne WW. Improving the outcome in gallstone ileus. Am J Surg. 1986 May;151(5): 572-6.
18. Torben Jorgensen, Department of Surgical Gastroenterology, D.Herlev Hospital, and the Glostrup population Studies, Department of internal medicine , University of Copenhagen, Denmark, Abdominal Symptoms and Gallstone Disease: An Epidemiological Investigation .American Association for the study of Liver Diseases. 1989; 9(6); 856-860.
19. Nabeela Faisal, Mohammad Faisal Bilal Lodhi, Mohammad Syed, Association of Cholelithiasis with junk food & lipid profile in young women. APMC-Annals of Punjab Medical College. Jan- March 2018;12(1):52-5.
20. Bhandari Reddy M, Shahzad G,,Association between oral hygiene and ultrasound confirmed gallstone disease in US population. European journal of Gastroenterology &Hepatol.2017 july; 29(7); 861-862.
21. Yongsoon Park, Association between diet and gallstones of cholesterol and pigment among patients with cholecystectomy: a case – control stufy in korea, Journal of Health Population and nutriention. 2017:36:39.
22. Harsh Mohan, Textbook of pathology Seventh edition .Edited by Praveen Mohan, Tanya Mohan, Sugandha Mohan, 2015,.pg no: 623, 625.
23. Sandeep Sachdeva, , Gallick, Anees A. Lifestyle and gallstone disease: Scope for primary prevention, Indian journal of Community Medicine.Sep 2011;36(4);263-267.
24. Pacchioni, M., Nicoletti, C., Caminiti, M., Calori, G., Curci, V., Camisasca, R. Pontiroli, A. E. (2000). Association of Obesity and Type II Diabetes Mellitus as a Risk Factor for Gallstones. Digestive Diseases and Sciences, 2002-2006;45(10).