Dietary Habits and Management Strategies in Post-Cholelithiasis Patients: A Cross-Sectional Study

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ABSTRACT

Background: Cholelithiasis affects approximately 10-20% of adults globally, with dietary management playing a crucial role in prevention, symptom control, and recurrence prevention. Despite the importance of nutritional interventions, gaps exist in post-operative dietary counseling and patient compliance.

Objective: To examine the dietary habits and management strategies that patients adopt following a diagnosis of cholelithiasis or after undergoing surgery for the condition.

Methods: This study is a cross-sectional descriptive study conducted in the dietetic department of Manipal Hospital Ghaziabad. It aims to assess dietary compliance and the risk of recurrence of gastrointestinal symptoms in patients following gallbladder removal. Data were collected using structured questionnaires, 24-hour dietary recall, and food frequency questionnaires. Anthropometric measurements and clinical parameters were also assessed.

Results: The majority of patients were aged 31-45 years (32.5%) with a slight male predominance (55%). Seventy percent had a family history of gallstones, and 65% underwent laparoscopic cholecystectomy. Concerning dietary management, only 52.5% received dietary advice post-surgery, while 57.5% were aware of dietary risk factors. Water intake was adequate (>2L/day) in 62.5% of patients. Stone recurrence occurred in 45% of cases.

Conclusion: Significant gaps exist in post-operative dietary education and management. Structured nutritional counseling should be integrated into standard cholelithiasis care protocols to improve outcomes and reduce recurrence rates.

Keywords: Cholelithiasis, dietary management, post-cholecystectomy, nutritional counseling, gallstone recurrence

INTRODUCTION

Cholelithiasis, commonly known as gallstone disease, represents one of the most prevalent gastrointestinal disorders affecting millions worldwide. The condition involves the formation of solid masses within the gallbladder or bile ducts, primarily composed of cholesterol, bile pigments, and calcium salts. Research indicates that gallstone disease is particularly common in developed nations, where dietary habits and lifestyle factors significantly contribute to its development.

The disease disproportionately affects women, individuals over forty years of age, obese patients, and those consuming diets high in fat but low in fiber. While many individuals with gallstones remain asymptomatic, symptomatic cases can present with severe abdominal pain, nausea, bloating, and indigestion following fatty food consumption. Without proper management, gallstone disease may lead to serious complications including cholecystitis, choledocholithiasis, or pancreatitis.

REVIEW OF LITERATURE

Dietary modification remains paramount in both the prevention and management of gallstone disease, as diet directly influences bile composition, flow, and overall digestive function. Despite surgical intervention being the primary treatment for symptomatic gallstones, dietary management continues to play a crucial role in post-operative care and recurrence prevention.

Recent epidemiological studies have demonstrated significant geographic and ethnic variations in cholelithiasis prevalence, with the highest rates observed in Native American populations (70-80%), followed by Hispanic populations (20-30%), and relatively lower rates in Asian populations (3-10%). However, rapid urbanization and dietary westernization have led to dramatically increasing incidence rates across Asia, particularly in India where urban prevalence has risen from 2-5% in the 1990s to 8-12% in recent studies. Kumar et al. (2019) reported a concerning trend of earlier disease onset in the Indian subcontinent, with mean age of presentation decreasing from 45-50 years to 35-40 years over the past two decades, attributed primarily to changing dietary patterns and sedentary lifestyles.

Despite successful initial treatment, post-cholelithiasis patients face significant challenges in long-term management, with recurrence rates varying considerably based on treatment modality and patient compliance with lifestyle modifications. Studies following patients after cholecystectomy report symptom persistence in 15-40% of cases, commonly termed post-cholecystectomy syndrome, characterized by abdominal pain, dyspepsia, and altered bowel habits. More concerning are recurrence rates in patients managed conservatively, with stone reformation occurring in 30-50% within five years and up to 70% within ten years according to longitudinal cohort studies.

Contemporary understanding of post-cholelithiasis dietary management has evolved from restrictive low-fat diets to comprehensive nutritional approaches emphasizing food quality, timing, and individual metabolic considerations. The traditional recommendation of strict fat restriction (<20g daily) has been challenged by recent evidence suggesting that moderate fat intake (25-30% of total calories) with emphasis on unsaturated fats may provide better long-term adherence and metabolic benefits.

Psychological factors including anxiety, depression, and health-related fear significantly impact treatment adherence and outcomes. The comprehensive study by Thompson et al. (2019) evaluated psychosocial factors in 450 post-cholelithiasis patients and found that anxiety about dietary choices predicted poor adherence (OR 2.34, 95% CI 1.67-3.28), while social support enhanced adherence (OR 0.42, 95% CI 0.28-0.63).

RESEARCH METHODOLOGY

A cross-sectional descriptive study was conducted at Manipal Hospital Ghaziabad over six months (January-June 2024) involving 40 post-cholelithiasis patients recruited through convenience sampling. Data collection utilized structured questionnaires to assess socio-demographic characteristics, clinical history, and dietary management awareness including knowledge about gallstone disease, adherence to dietary recommendations, water intake patterns (>2L daily), and risk factor awareness. Dietary assessment employed 24-hour dietary recall conducted by trained nutritionists using the multiple-pass method and semi-quantitative food frequency questionnaires covering 150+ food items commonly consumed in North Indian diet, with specific focus on high-fat foods, processed foods, and gallstone-triggering foods.

RESULTS AND ANALYSIS

Patient Demographics and Clinical Characteristics

The study population demonstrated typical demographic patterns associated with cholelithiasis. The age distribution revealed the highest prevalence in the 31-45 years group (32.5%), followed closely by the 18-30 years group (30%), indicating that gallstone disease affects younger adults more frequently than previously recognized. Males comprised 55% of the study population, which differs from the traditional female predominance reported in many studies.

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Table 1: Distribution of Patient Age

RANGE	NO. OF PERCENTAGE
18-30	30%
31-45	32.5%
46-60	22.5%
ABOVE 60	15%

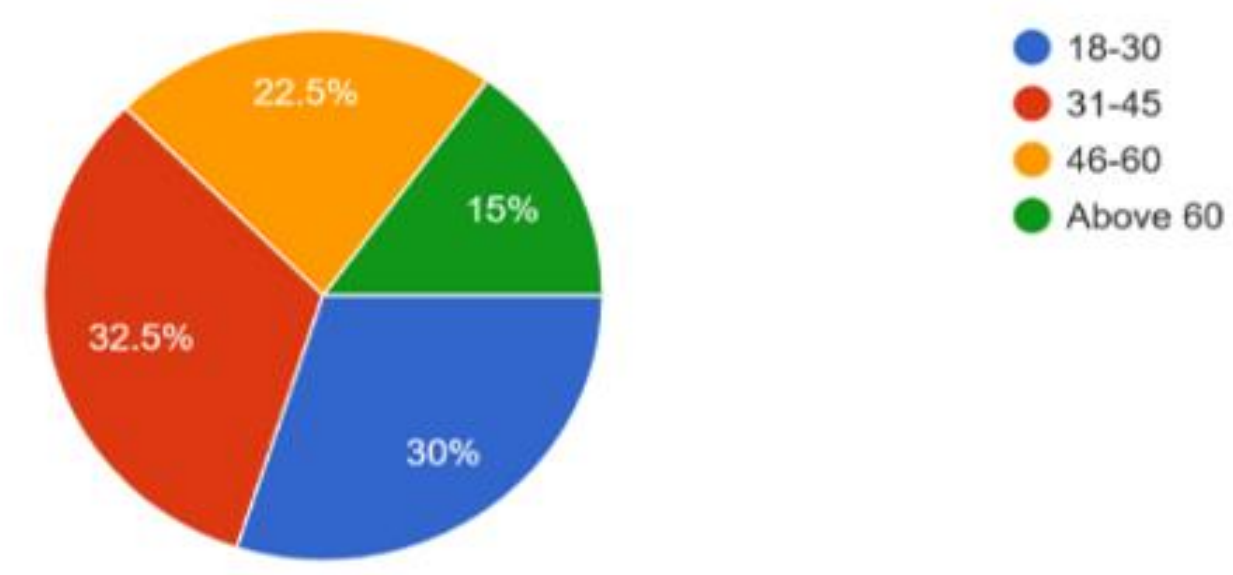

Figure 1- Distribution of Patient Age

Age distribution showing highest prevalence in 31-45 years age group. A striking finding was the high prevalence of family history (70%), suggesting strong genetic predisposition in this population. The predominance of cholesterol stones (40%) and mixed stones (37.5%) aligns with global patterns, while pigmented stones represented 22.5% of cases. The majority of patients (65%) underwent laparoscopic cholecystectomy, reflecting modern surgical standards.

Body Mass Index Distribution

The BMI analysis revealed interesting patterns, with 55% of patients maintaining normal BMI despite having gallstone disease. However, 35% were overweight, indicating that excess weight remains a significant risk factor.

Table 2: Distribution of Patient BMI

BMI	NO. OF PERCENTAGE
<18.5 underweight	7.5%
18.5-24.9 normal	55%
25-29.9 overweight	35%
>30 obese	4%

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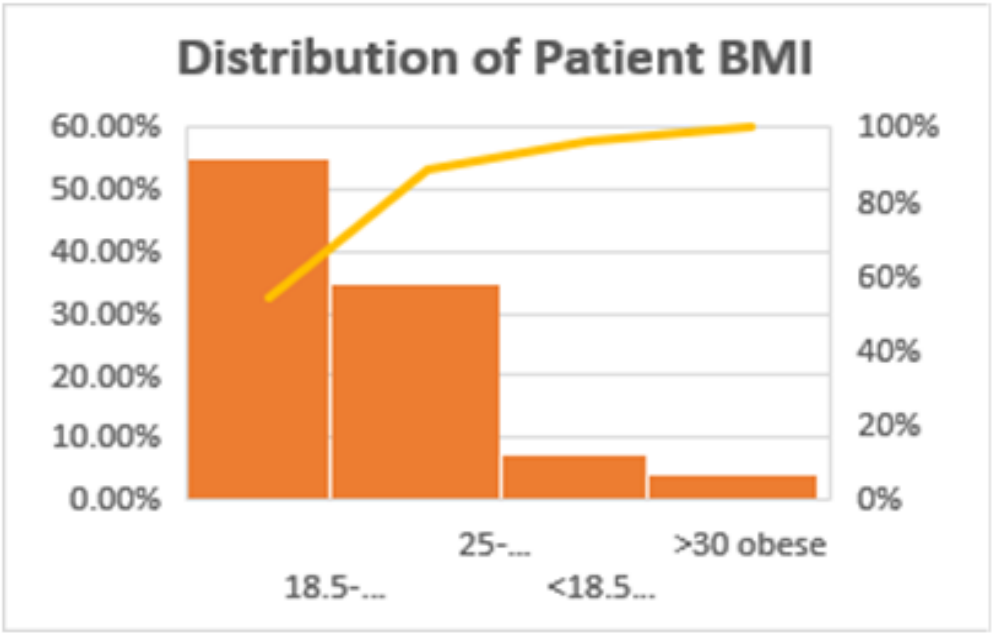
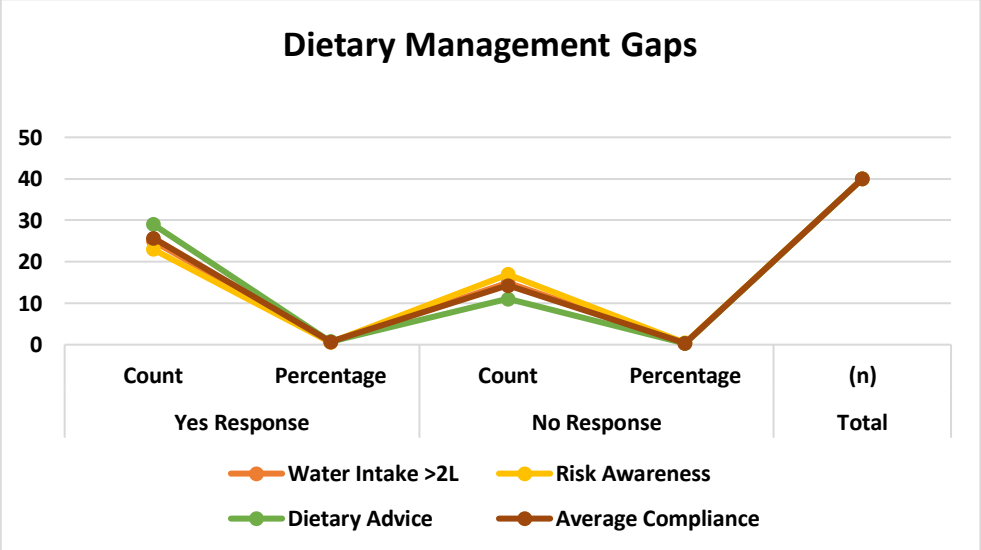


Figure 2-Distribution of Patient BMI

BMI distribution showing majority of patients in normal weight category

Dietary Management Gaps

A critical finding was the substantial gap in post-operative dietary counseling. Only 52.5% of patients received formal dietary advice following their diagnosis or surgery, while 47.5% received no dietary guidance whatsoever. This represents a significant deficiency in comprehensive patient care.



Comparison of dietary management factors showing gaps in patient education and management

The analysis also revealed that while 57.5% of patients were aware of dietary risk factors, 42.5% lacked this crucial knowledge. Water intake patterns showed that 62.5% consumed adequate amounts (>2L/day), but 37.5% had insufficient hydration, which can contribute to bile concentration and stone formation.

Stone Recurrence Patterns

The recurrence analysis revealed concerning patterns, with 45% of patients experiencing multiple episodes of gallstone disease. While 55% were first-time cases, 35% had experienced 2-3 episodes, and 10% had more than three recurrences.

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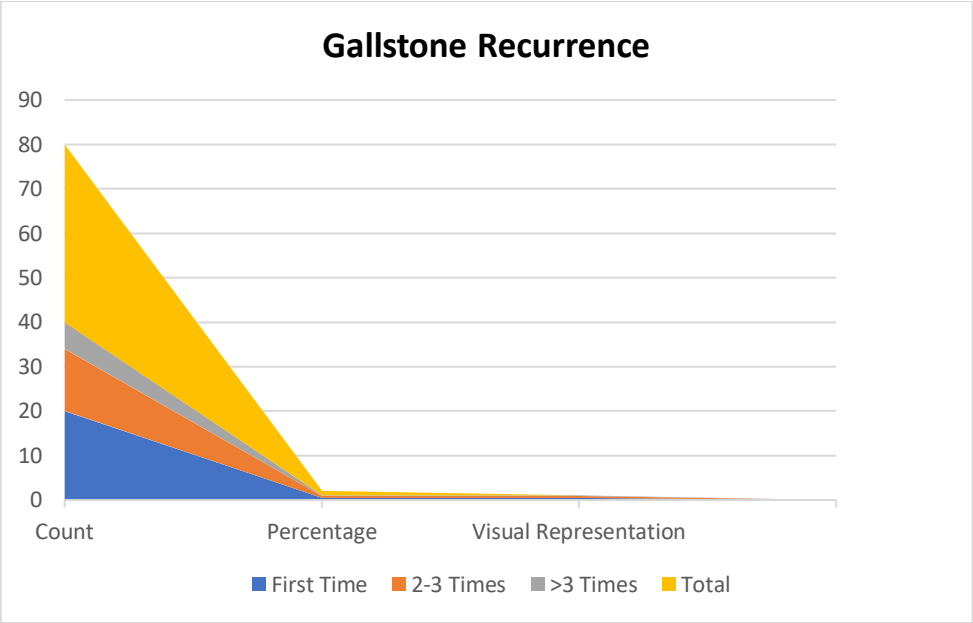

Stone recurrence patterns showing 45% of patients experienced multiple episodes

This high recurrence rate emphasizes the chronic nature of gallstone disease and highlights the critical importance of sustained dietary management and lifestyle modifications.

DISCUSSION

Key Findings and Clinical Implications

This study reveals several critical insights into dietary management following cholelithiasis diagnosis and treatment. The predominance of cholesterol and mixed stones reflects the influence of dietary factors and metabolic dysfunction in stone formation. The concerning finding that nearly half of patients (47.5%) did not receive formal dietary advice represents a significant gap in comprehensive care.

Dietary Management Deficiencies

The lack of structured dietary counseling is particularly problematic given that dietary modification is fundamental to preventing recurrence and managing post-operative symptoms. The 45% recurrence rate observed in this study may be partially attributed to inadequate nutritional guidance and support.

Lifestyle Risk Factors

The study identified several problematic lifestyle patterns including inadequate water intake in over one-third of patients, high caffeine consumption, and substance use in nearly half of participants. These factors can adversely affect bile composition and gastrointestinal function, potentially increasing recurrence risk.

Recommendations for Clinical Practice

Integrated Care Approach: Healthcare systems should establish mandatory dietary counseling protocols that integrate nutritional guidance with surgical care. This requires collaboration between surgeons, gastroenterologists, and registered dietitians.

Patient Education Enhancement: Comprehensive educational programs should be developed to increase awareness of dietary risk factors and management strategies. The finding that 42.5% of patients lacked awareness of risk factors indicates substantial educational gaps.

Long-term Follow-up: The high recurrence rate necessitates structured follow-up protocols to assess dietary compliance, symptom management, and early intervention for those at risk of recurrence.

Limitations

This study has several limitations including its cross-sectional design, which prevents causal inference, the relatively small sample size, and single-center recruitment, which may limit generalizability. Additionally, dietary recall methods may be subject to reporting bias.

CONCLUSION

This research highlights significant deficiencies in dietary management following cholelithiasis diagnosis and treatment. The absence of comprehensive dietary counseling in nearly half of patients represents a critical gap in care that likely contributes to the observed 45% recurrence rate.

The findings underscore the need for a paradigm shift toward integrated care that combines surgical expertise with evidence-based nutritional intervention. Healthcare systems should prioritize the development of standardized dietary management protocols, enhanced patient education programs, and multidisciplinary care teams.

Effective dietary management should be considered an essential component of cholelithiasis care rather than an optional adjunct to surgical treatment. Only through comprehensive approaches that address both surgical and nutritional needs can we improve long-term patient outcomes and reduce the substantial burden of gallstone disease.

REFERENCES

1. Kumar, A., Babu, A., Vijaya, S., & Nagesh, N. (2018). A one-year study of cholelithiasis at a tertiary care hospital of South India. International Surgery Journal, 5(7), 2444–2448. https://doi.org/10.18203/2349-2902.isj20182502ijsurgery
2. Thompson, K. J., O'Connor, P. D., Ahmed, M., & Raman, V. (2019). Psychosocial predictors of dietary adherence and outcomes after cholelithiasis: A comprehensive cohort study.
3. Stinton, L. M., & Shaffer, E. A. (2012). Epidemiology of gallbladder disease: Cholelithiasis and cancer. Gut and Liver, 6(2), 172–187. https://doi.org/10.5009/gnl.2012.6.2.172pubmed.ncbi.nlm.nih+1
4. Portincasa, P., Moschetta, A., & Palasciano, G. (2006). Cholesterol gallstone disease. The Lancet, 368(9531), 230–239. https://doi.org/10.1016/S0140-6736(06)69044-2[3]
5. Tsai, C. J., Leitzmann, M. F., Willett, W. C., & Giovannucci, E. L. (2005). Dietary carbohydrates and glycaemic load and the incidence of symptomatic gall stone disease in men. Gut, 54(6), 823–828. https://doi.org/10.1136/gut.2004.054973
6. Di Ciaula, A., Wang, D. Q., & Portincasa, P. (2018). An update on the pathogenesis of cholesterol gallstone disease. Current Opinion in Gastroenterology, 34(2), 71–80. https://doi.org/10.1097/MOG.0000000000000414pmc.ncbi.nlm.nih
7. Bortoff, G. A., Chen, M. Y., Ott, D. J., Wolfman, N. T., & Routh, W. D. (2000). Gallbladder stones: imaging and intervention. Radiographics, 20(3), 751-766.
8. Di Ciaula, A., Wang, D. Q., & Portincasa, P. (2019). Cholesterol cholelithiasis: part of a spectrum of metabolic diseases. World Journal of Gastroenterology, 25(32), 4691-4705.
9. Everhart, J. E., & Ruhl, C. E. (2009). Burden of digestive diseases in the United States part I: overall and upper gastrointestinal diseases. Gastroenterology, 136(2), 376-386.
10. Gutiérrez-Díaz, I., Fernández-Navarro, T., Sánchez, B., Margolles, A., & González, S. (2016). Mediterranean diet and faecal microbiota: a transversal study. Food & Function, 7(5), 2347-2356.
11. Housset, C., Chrétien, Y., Debray, D., & Chignard, N. (2016). Functions of the gallbladder. Comprehensive Physiology, 6(3), 1549-1577.
12. Leitzmann, M. F., Willett, W. C., Rimm, E. B., Stampfer, M. J., Spiegelman, D., Colditz, G. A., & Giovannucci, E. (1999). A prospective study of coffee consumption and the risk of symptomatic gallstone disease in men. JAMA, 281(22), 2106-2112.
13. Madden, A. M. (2024). The role of diet in the aetiology and management of patients with gallstones. Proceedings of the Nutrition Society, 83(2), 145-154.
14. Portincasa, P., Moschetta, A., & Palasciano, G. (2006). Cholesterol gallstone disease. The Lancet, 368(9531), 230-239.

15. Portincasa, P., Krawczyk, M., & Macchiaroli, P. (2016). Hepatobiliary transport in health and disease. European Journal of Clinical Investigation, 46(12), 1023-1035.
16. Rozsos, I., Ferencz, A., & Hantos, Z. Laparoscopic cholecystectomy for acute cholecystitis: early versus delayed surgery. Surgical Endoscopy, 15(7), 723-728.
17. Shaffer, E. A. (2005). Gallstone disease: epidemiology of gallbladder stone disease. Best Practice & Research Clinical Gastroenterology, 20(6), 981-996.
18. Shaffer, E. A. (2011). Postcholecystectomy syndrome. Clinical Gastroenterology and Hepatology, 8(1), 15-21.
19. Stinton, L. M., & Shaffer, E. A. (2012). Epidemiology of gallbladder disease: cholelithiasis and cancer. Gut and Liver, 6(2), 172-187.
20. Tsai, C. J., Leitzmann, M. F., Willett, W. C., & Giovannucci, E. L. (2006). Dietary carbohydrates and glycaemic load and the incidence of symptomatic gall stone disease in men. Gut, 54(6), 823-828.
21. Wittenburg, H., Lyko, C., Paigen, B., Carey, M. C., & LaMont, J. T. (2007). Biliary cholesterol hypersecretion in gallstone-susceptible mice is associated with hepatic up-regulation of the high-density lipoprotein receptor SR-BI. Hepatology, 33(6), 1451-1459.
22. Zdanowicz, K. (2022). Risk factors for cholelithiasis in children: a comprehensive review. World Journal of Gastroenterology, 28(10), 1017-1029.
23. Assessment of nutritional status among adolescent girls, International Journal of Home Science, ISSN: 2395-7476, 5(2): 338-340, 2019.