

## **Demographic Characteristics and Prevalence of Gallstones among Adults Patients in Khost Province, Afghanistan**

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### **ABSTRACT:**

**Introduction:** Gallstones are a common digestive disorder that significantly affects quality of life and healthcare costs. Their occurrence is influenced by age, gender, lifestyle, genetic, and economic factors. In Khost Province, Afghanistan, research on this topic is limited. This study aimed to determine the Demographic Characteristics and Prevalence of among adults patients in Khost Province.

**Materials and Methods:** A cross-sectional, descriptive study was conducted during 1403. A total of 200 gallstone patients from various districts of Khost Province were included. Data were collected using questionnaires and clinical assessments and analyzed statistically.

**Results:** Among participants, 107 (53.5%) were female and 93 (46.5%) were male. The most represented age group was 41–50 years (93) 46.5%. Regarding marital status, 193 (96.5%) were married and only 7 (3.5%) were single. Professionally, most were housewife (86, 43%), followed by formers (38, 19%) and teachers (29, 14.5%). Residence distribution showed 140 (70%) rural and 60 (30%) urban. Economically, 108 (54%) were low-income, 77 (38.5%) middle-income, 14 (7%) high-

income, and 1 (0.5%) had a good economic status. Family history of gallstones was reported in 115 (57.5%).

**Conclusion:** The study indicates that female gender, middle age (41–50 years), being married, having a positive family history, and living in rural areas are key factors associated with an increased risk of gallstone formation. These findings highlight the influence of demographic and hereditary factors on the prevalence of gallstones and suggest the need for targeted preventive measures in high-risk populations.

**Keywords:** *Gallstones, prevalence, Demographic Characteristics, family history, Khost Province*

## **Introduction:**

Gallstone disease is a significant health concern among adults worldwide, resulting from the accumulation of solid deposits in the gallbladder. While commonly associated with abdominal discomfort or digestive disturbances, gallstones can have broader systemic effects on health. The presence of gallstones may lead to obstruction of the bile ducts, inflammatory conditions, impaired digestive function, and jaundice. If left untreated, severe cases can pose a direct threat to life, highlighting the importance of early detection and effective management (1, 2). Gallstone formation is influenced by a variety of factors, including age, gender, family history, lifestyle, dietary habits, level of physical activity, socioeconomic conditions, and educational attainment (3, 4). Studies have shown that women, particularly those who have experienced pregnancies, are at higher risk, and the likelihood of gallstone development tends to increase with advancing age. In addition, sedentary behavior, excessive consumption of fatty foods, and the presence of chronic diseases are considered key contributors to this condition (5). The prevalence of gallstone varies widely across different regions of the world. In several European countries, it affects between 10% and 20% of the adult population, while in Asian nations, the prevalence can reach up to 15% (6, 7). In Afghanistan, comprehensive data on gallstone prevalence are limited, and there is little information regarding the occurrence of gallstones and their associated risk factors among adults in Khost Province. Understanding the distribution and determinants of gallstones is essential for designing effective healthcare interventions. Accurate

epidemiological insights can support early diagnosis, preventive strategies, and appropriate treatment plans, ultimately improving patient outcomes and optimizing the use of medical resources (8, 9). Moreover, the findings of this study can contribute to health policy development and public education initiatives. They will provide valuable information on factors such as family history, diet, physical activity, socioeconomic status, and education, which influence gallstone formation. This knowledge can help guide the creation of targeted prevention and management programs for adults in Khost Province.

## **Materials and Methods**

**Study Design:** This cross-sectional, descriptive study was conducted to assess the Demographic Characteristics and Prevalence gallstones among adults Patients in Khost Province, Afghanistan. The study design was chosen to evaluate the current health status and lifestyle-related factors of the patients. The study was carried out at Sheikh Zayed University Teaching Hospital in Khost, specifically in the ultrasound department, which provides diagnostic facilities for gastrointestinal disorders. Data were collected from Hamal to Sonbola 1403 (March to September 2024). A total of 200 adult patients diagnosed with gallstones at the hospital were included.

**Inclusion criteria:** Adults aged 21–80 years, confirmed gallstone diagnosis via ultrasound or clinical examination, and written informed consent.

**Exclusion criteria:** Patients under 21 years, those without confirmed gallstone diagnosis, or those who did not provide consent.

**Sampling Method and Sample Size:** A simple random sampling method was applied based on hospital records. During the study period, approximately 1,700 patients with gallbladder disorders visited the hospital, of which 200 met the inclusion criteria and were selected. Participants represented various districts of Khost Province. Demographic variables Age, gender, marital status, family history, socioeconomic status, educational level.

**Data Collection:** Data were collected through medical records, structured questionnaires, and direct interviews. Quality control included double-checking entries and excluding incomplete records. Data were analyzed using Excel. Descriptive statistics including frequencies, percentages, means, and standard

deviations were calculated. Results were presented in tables and graphs. Ethical Considerations All participants were informed about the study objectives and provided written consent. Patient confidentiality was strictly maintained. The study was approved by the hospital's ethics committee.

**Study Significance:** This is the first study in Afghanistan to systematically evaluate the Demographic Characteristics and Prevalence of gallstones among adults in Khost Province, providing valuable information for regional healthcare planning and preventive strategies.

## Results

Among participants, 107 (53.5%) were female and 93 (46.5%) were male. The most represented age group was 41–50 years (93, 46.5%). Regarding marital status, 193 (96.5%) were married and only 7 (3.5%) were single. Professionally, most were housewife (86, 43%), followed by formers (38, 19%) and teachers (29, 14.5%). Residence distribution showed 140 (70%) rural and 60 (30%) urban. Economically, 108 (54%) were low-income, 77 (38.5%) middle-income, 14 (7%) high-income, and 1 (0.5%) had a good economic status. Family history of gallstones was reported in 115 (57.5%). A total of 200 adult patients diagnosed with gallstones were included in the study. The demographic characteristics of the participants are summarized below.

### Gender Distribution

Out of 200 participants, 93 (46.5%) were male and 107 (53.5%) were female. Females showed slightly higher gallstone prevalence, consistent with prior studies.

**Table 1:** illustrating that females have a higher proportion of gallstone cases compared to males.

Gender		
	Count	Percentage
Male	93	46.50%
Female	107	53.50%
Total	200	100%

### Marital Status

Most participants were married (193, 96.5%), while only 7 (3.5%) were single, indicating higher prevalence among married adults.

**Table 2:** showing the overwhelming majority of participants are married.

Marital status		
	Count	Percentage
Married	193	96.50%
Single	7	3.50%
Total	200	100%

### Age Distribution

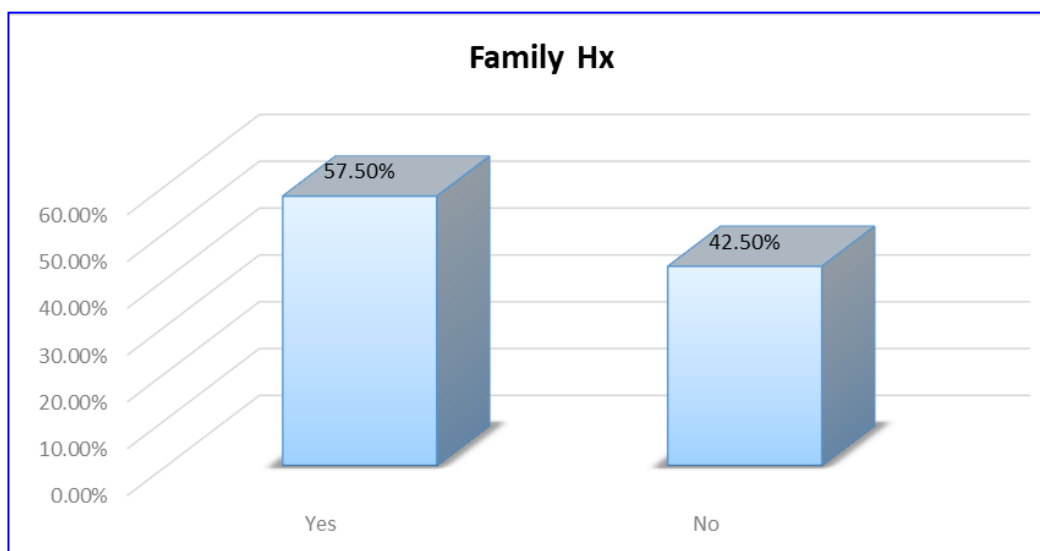
The majority of participants were aged 41–50 years (93, 46.5%), followed by 51–60 years (42, 21%). This indicates that gallstone prevalence is highest in middle-aged adults. Increased age is associated with a higher risk of gallstone formation due to hormonal and metabolic changes affecting bile flow and cholesterol saturation.

**Table 3:** showing peak prevalence in the 41–50 Years Age group.

Age		
Age Groups	Count	Percentage
21 – 30	2	1.00%
31 – 40	17	8.50%
41 – 50	93	46.50%
51 – 60	42	21.00%
61 – 70	33	16.50%
71 – 80	13	6.50%
Total	200	100%

### Family History

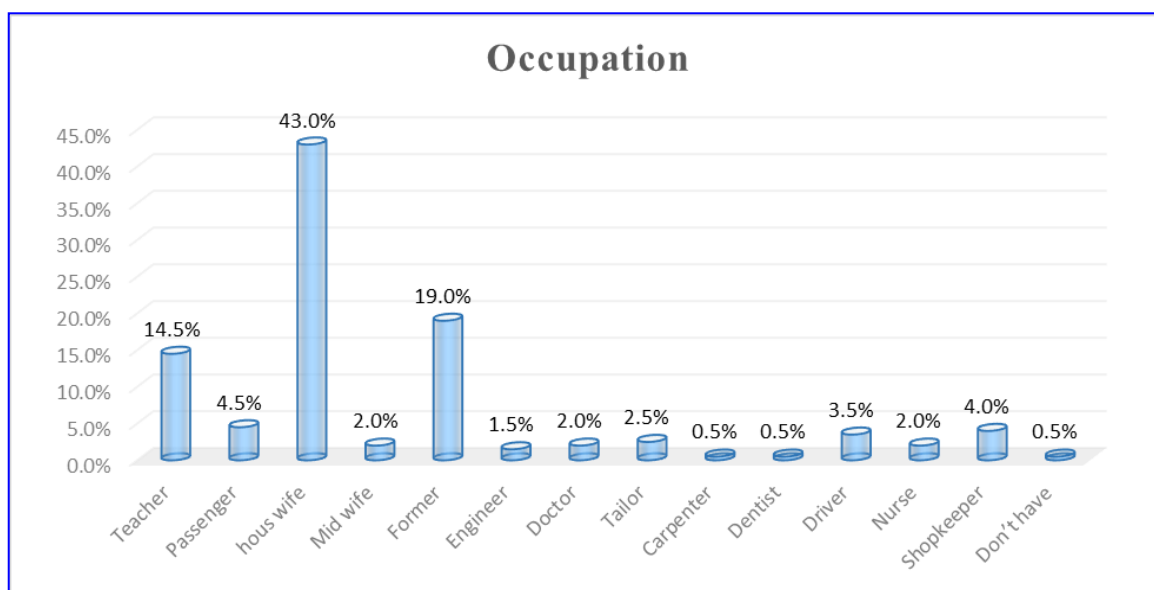
A positive family history of gallstones was reported by 115 participants (57.5%), while 85 (42.5%) had no family history. This emphasizes the role of genetic factors in gallstone formation.



**Graph 1:** comparing participants with and without family history of gallstones

## Occupation

The majority of participants were housewives (86, 43%), followed by farmers (38, 19%) and teachers (29, 14.5%). Occupation distribution suggests that gallstone prevalence may vary across different professions, possibly related to lifestyle, physical activity, and dietary habits

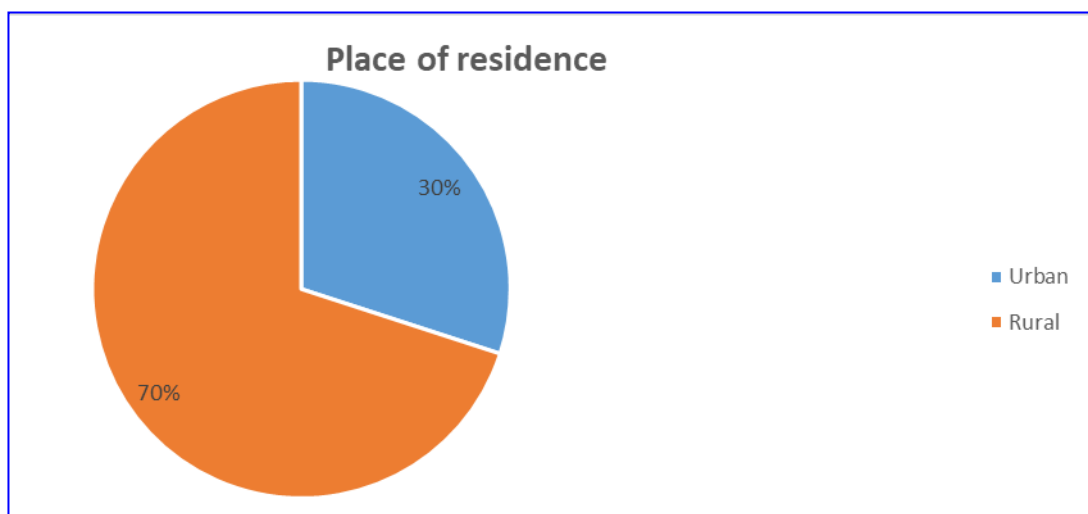


**Graph 2:** showing gallstone prevalence by occupation, highlighting housewives as the largest group.

## Place of Residence

Among the 200 participants, 60 (30%) resided in urban areas, while 140 (70%) lived in rural areas. The majority of patients were from rural settings, suggesting that limited access to healthcare facilities and lower health awareness in these areas may

contribute to higher gallstone prevalence. Residence also affects the accessibility of diagnosis, treatment, and follow-up care.



**Graph 3:** showing that rural participants make up the majority of gallstone cases, highlighting potential disparities in healthcare access.

### Economic Status

Among the 200 participants, 108 (54%) reported a low economic status, 77 (38.5%) were middle class, 14 (7%) had high economic status, and only 1 (0.5%) had a good economic condition. This indicates that gallstone prevalence is higher among individuals with lower socioeconomic status, which may be related to limited access to healthcare, nutrition, and preventive measures

**Table 4:** Showing the economic status

Economic Status		
	Count	Percentage
Good	1	0.5%
High	14	7.0%
Low	108	54.0%
Middle	77	38.5%
Total	200	100%

## Discussion

Our study showed that 53.5% of the patients were female and 46.5% were male, indicating that women are slightly more susceptible to gallstone formation. This finding is consistent with the 2021 study by Farda et al. conducted in Kabul, Afghanistan, which also demonstrated that women were more affected by gallstone formation (10). Similarly, the 2022 study by Patel et al. in India reported comparable results, showing that women aged 40–60 years had a higher risk of developing gallstones than men (11). The 2015 study by Ansari et al. in Iran also found that women have a higher likelihood of gallstone formation (12). The 1998 study by Kratzer et al. in Germany likewise documented a higher prevalence of gallstones among women (13). Moreover, the 2024 research by Analp Arida et al. in the United States indicated that women were more affected by gallstone prevalence than men (14). Our study shows that among patients with gallstones, 70% were married and 30% were unmarried. This finding indicates that married individuals have a higher likelihood of developing gallstones. Possible reasons for this may include older age, lifestyle factors, dietary habits, and increased family responsibilities, which collectively may contribute to problems such as obesity and higher fat intake. Similar results have been observed in previous international studies. The study by Farda et al. (2021) in Kabul, Afghanistan, also demonstrated that married individuals had a higher prevalence of the disease. Regarding age distribution, most participants (46.5%) were in the 41–50 years age group, while the proportion in other age groups was lower. This indicates that the prevalence of gallstones is highest in this age group. Increasing age is associated with a higher risk of gallstone formation, as hormonal and metabolic changes in the body affect bile flow and cholesterol concentration. Compared with previous studies, Farda et al. (2021) in Kabul, Afghanistan, reported that patients aged 40–60 years had the highest risk of developing gallstones, which was linked to hormonal changes and increased BMI (68). Regarding family history, 57.5% of participants reported a positive family history of gallstones. This indicates that family history plays an important role in the development of gallstones and is considered a marker of genetic and hereditary factors. In southeastern Iran, Ansari et al. (2015) demonstrated that a positive family



history increases the likelihood of gallstone formation, and genetic influences are evident in affected populations (70).

Regarding occupational distribution, out of 200 participants, 86 (43%) were housewives, representing the largest group. Teachers accounted for 29 (14.5%), employees or former employees 38 (19%), while doctors and mid-level nurses were few. Other professions such as engineers, tailors, carpenters, drivers, and shopkeepers constituted smaller proportions. Only one participant had no occupation. The analysis indicates that occupation type is associated with the prevalence of gallstone disease. Housewives, who generally have lower levels of physical activity, are at higher risk of gallstone formation. A similar finding was reported in central India by Patel et al. (2022), showing that patients with low physical activity have an increased risk of developing gallstones (69).

Regarding residence, most participants (70%) were rural residents, while only 30% lived in urban areas. This indicates that limited healthcare facilities, restricted access to health information, and inadequate healthcare services in rural areas may contribute to a higher incidence of gallstones. Additionally, residence affects access to diagnosis, examinations, and treatment. Compared with previous studies, Farda et al. (2021) in Kabul, Afghanistan, found that patients from rural areas mostly sought hospital care after diagnosis, with limited access to examinations, which prolonged the time to disease identification (68).

## **Conclusion**

In this study of 200 adult patients in Khost Province, gallstone prevalence was associated with multiple demographic and lifestyle factors. Females were slightly more affected than males (53.5% vs. 46.5%), and most participants were married (96.5%), suggesting a possible link with age and hormonal influences. The majority were aged 41–50 years (46.5%), highlighting increased risk with advancing age. A positive family history was reported by 57.5% of participants, indicating a genetic predisposition. Housewives represented the largest occupational group (43%), reflecting potential effects of lifestyle and reduced physical activity. Furthermore, most participants lived in rural areas (70%) and had low economic status (54%),

suggesting that limited access to healthcare and socioeconomic factors may contribute to gallstone development. These findings underscore the importance of targeted preventive strategies, health education, and improved access to diagnostic and treatment services to reduce gallstone burden in this population.

## References

1. Acalovschi M. Cholesterol gallstones: from epidemiology to prevention. *Postgraduate medical journal*. 2001;77(906):221.
2. De Santis A, Attili AF, Corradini SG, Scafato E, Cantagalli A, De Luca C, et al. Gallstones and diabetes: a case-control study in a free-living population sample. *Hepatology*. 1997;25(4):787-90.
3. Ahmed A, Cheung RC, Keefe EB. Management of gallstones and their complications. *American family physician*. 2000;61(6):1673-80.
4. Dutta E, Lewis MG, Dhillon P, Albert S. Risk Factors for Gallbladder Cancer in the High-Burden Regions in India: A Systematic Review and Meta-Analysis. Available at SSRN 5172466.
5. Stokes CS. Risk factors and interventions for primary prevention of gallbladder stones: Cochrane systematic review and meta-analysis of randomised controlled trials. 2013.
6. Banks PA, Gastroenterology Freeman M. Practice guidelines in acute pancreatitis. *American Journal of Gastroenterology*. 1997;92(3):377-86.
7. Wang X, Yu W, Jiang G, Li H, Li S, Xie L, et al. Global Epidemiology of Gallstones in the 21st Century: A Systematic Review and Meta-Analysis. *Clinical Gastroenterology and Hepatology*. 2024;22.
8. Shabanzadeh DM, Sørensen LT, Jørgensen T. Determinants for gallstone formation - a new data cohort study and a systematic review with meta-analysis. *Scandinavian journal of gastroenterology*. 2016;51(10):1239-48.

9. Sun H, Warren J, Yip J, Ji Y, Hao S, Han W, et al. Factors Influencing Gallstone Formation: A Review of the Literature. *Biomolecules*. 2022;12(4):550.
10. Farda W, Tani MK, Manning RG, Fahmi MS, Barai N. Laparoscopic cholecystectomy: review of 1430 cases in cure international hospital, kabul, Afghanistan. *BMC surgery*. 2021;21(1):344.
11. Patel AM, Yeola M, Mahakalkar C, Patel A, Mahakalkar C. Demographic and risk factor profile in patients of gallstone disease in Central India. *Cureus*. 2022;14(5).
12. Ansari-Moghaddam A, Khorram A, Miri-Bonjar M, Mohammadi M, 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*. 2015;8(4):60.
13. Kratzer W, Kachele V, Mason R, Hill V, Hay B, Haug C, et al. Gallstone prevalence in Germany: the Ulm gallbladder stone study. *Digestive diseases and sciences*. 1998;43(6):1285-91.
14. Unalp-Arida A, Ruhl CE. Burden of gallstone disease in the United States population: Prepandemic rates and trends. *World journal of gastrointestinal surgery*. 2024;16(4):1130.