IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 24, Issue 12 Ser. 8 (December. 2025), PP 18-23
www.iosrjournals.org

Sociodemographic Determinants and Their Association with Surgical Jaundice

Saddam JA[1], Islam KM[2], Azam AN[3], Talukder MT[4], Rayhan GM[5], Chowdhury MZ[6], Hakim HN[7]

[1]*Dr. Jubayer Ahmed Saddam, Assistant Professor, Department of General Surgery, Ad-Din Medical College Hospital, Dhaka, Bangladesh*

[2]*Dr. Kazi Mazharul Islam, Junior Consultant, Department of Surgery, Dhaka Medical College Hospital, Dhaka, Bangladesh.*

[3]*Dr. ANM Nure Azam, Junior Consultant, Department of Surgery, Sheikh Hasina National Institute of Burn and Plastic Surgery, Dhaka, Bangladesh.*

[4]*Dr. Md. Tuhin Talukder, Junior Consultant (OSD), Directorate General of Health Services, Dhaka, Bangladesh.*

[5]*Dr. Golam Mahmud Rayhan, Junior Consultant, Department of Surgery, Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh.*

[6]*Dr. Mahmud Zaman Chowdhury, Medical Officer, Department of Surgery, Mugda Medical College Hospital, Dhaka, Bangladesh.*

[7]*Dr. H A Nazmul Hakim, Professor, Department of Hepatobiliary Surgery and Liver Transplant, BIRDEM General Hospital, Dhaka, Bangladesh.*

Corresponding Author: *Dr. Jubayer Ahmed Saddam, Assistant Professor, Department of General Surgery, Ad-Din Medical College Hospital, Dhaka, Bangladesh*

ABSTRACT

Introduction: *Sociodemographic factors play a crucial role in determining the etiology of surgical jaundice, influencing whether the underlying cause is malignant or benign. Age is a significant determinant, with malignant cases more prevalent in older individuals, while benign causes are more frequent in younger patients. This study aimed to assess the sociodemographic determinants and their association with surgical jaundice.*

Methods: *This prospective observational study was conducted at the Department of Surgery, Dhaka Medical College Hospital, over 12 months. A total of 100 patients were selected as study subjects by purposive convenient sampling technique. The diagnosis was established based on investigations. After data collection, all entries were checked for consistency and analyzed using SPSS version 26.*

Result: *The study found that the majority of patients (44%) were aged 51–60 years, with malignant surgical jaundice significantly more common in older individuals (p=0.003). Among malignant cases, 56.1% were in the 51–60 age group, while benign cases were more frequent in younger patients (39.5% in the 30–50 age group). Gender distribution was similar between malignant (61.4% male, 38.6% female) and benign cases (53.5% male, 46.5% female; p=0.540). Carcinoma of the pancreas (32%) was the most common malignant cause, while choledocholithiasis (28%) was the leading benign cause. Additionally, 69% of patients were from urban areas.*

Conclusion: *The study indicates a significant association between age and the causes of surgical jaundice, with malignant cases being more common in older individuals, while benign cases are more frequent in younger patients. However, no significant association was found between gender and the type of surgical jaundice. These findings highlight the importance of considering age as a key sociodemographic determinant in the early diagnosis and management of surgical jaundice.*

Keywords: *Sociodemographic determinants, Surgical Jaundice, Carcinoma Head of Pancreas, Choledocholithiasis*

I. INTRODUCTION

Surgical Jaundice is a common surgical problem with variable causes ranging from benign causes like choledocholithiasis to malignant causes like carcinoma of the head of the pancreas. It results from failure of passage of bile to the intestine resulting from any pathology obstructing the biliary tree.[1] Each year, over a million new cases of cholelithiasis are detected in the United States, with roughly 8% having common bile duct stones. Each year, roughly 25,000 new cases of pancreatic carcinoma are diagnosed, almost half of which are

associated with jaundice, and 7,000 to 8,000 new cases of bile duct tumors are diagnosed. Pancreatic cancer affects 8-10 people per 100,000, making it the most common cause of malignant Surgical jaundice and the presenting symptom in more than three-quarters of cases.[2] The treatment and prognosis of Surgical jaundice depend upon the etiology and level of biliary obstruction.[3]If not diagnosed in time and treatment is delayed then there is a high morbidity and mortality in the patients with Surgical jaundice.[4] In Surgical jaundice, there is an increase in the conjugated fraction of bilirubin.[2] The conjugated bile in the liver encounters an obstacle to its elimination in the duodenum. This may be due to disturbances of excretion such as hepato-cellular injury or abnormalities of the flow between the hepatocyte and the ampulla of Vater, such as gallstones of the main bile duct, periampullary neoplasm, or pancreatitis.[5] Patients suffering from Surgical jaundice usually present with severe abdominal pain, fever, nausea, vomiting, and pruritus due to retained bile salts. They may also suffer from coagulopathy, sepsis, and renal failure which are the major complications of patients with Surgical jaundice.[2] The nature of these clinical manifestations usually depends on the original etiology and the progress of the disease process.[1] The etiology of Surgical jaundice varies greatly depending upon the geographical region as well as the age of the patients. In neonates, the common causes of Surgical jaundice include biliary atresia and neonatal hepatitis while in young and middle-aged patients common causes include cholelithiasis, primary sclerosing cholangitis, external compression over the bile duct, and biliary stricture. With advancing stages the likelihood of malignant diseases such as cholangiocarcinoma, carcinoma head of the pancreas, periampullary carcinoma, and any other malignant growth compressing over bile duct increases.[4] The pathogenesis of Surgical jaundice ranges from malignant to benign. Malignant causes include cholangiocarcinoma and pancreatic adenocarcinoma, while benign Surgical jaundice mainly originates from choledocholithiasis and chronic pancreatitis.[6] Information about the level and cause of the obstruction can be known by various anatomic imaging modalities.[7] Computed tomography (CT), endoscopic ultrasound (EUS), endoscopic retrograde cholangiopancreatography (ERCP), helical CT cholangiography, Magnetic Resonance Cholangiopancreatography (MRCP), radionuclide imaging, and ultrasonography are the commonly used invasive and non-invasive radiological techniques to investigate hepatobiliary lesions.[8] ERCP is considered the Gold standard in the evaluation of biliary trees, but it is an invasive technique associated with complications like pancreatitis.[7] MRCP is an important noninvasive imaging investigation in the preoperative evaluation of patients with Surgical jaundice.[9] Although non-invasive, CT involves exposure to radiation and contrast and has low sensitivity in detecting biliary diseases.[10] Even though many new imaging modalities are available, because of the cost-effectiveness, easy availability, and non-invasive nature USG can be considered as first line imaging tool.[11] Sociodemographic factors such as age, gender, and ethnicity play a significant role in the etiology and progression of surgical jaundice. Studies have shown that the risk of obstructive jaundice increases with age, particularly due to malignant conditions like carcinoma of the gallbladder[12]. Gender differences have also been observed[13]. Additionally, factors like obesity, metabolic diseases, and liver conditions such as hepatitis C and cirrhosis have been identified as contributing risk factors for gallstones, which can lead to obstructive jaundice[14]. This study aimed to assess the sociodemographic determinants and their association with surgical jaundice.

II. METHODS

This prospective observational study was conducted at the Department of Surgery, Dhaka Medical College Hospital, over 12 months. Patients with Surgical jaundice admitted to the Department of Surgery, DMCH were considered as the study population. A total of 100 patients were selected as study subjects by purposive convenient sampling technique.

Inclusion criteria:

- Age: >18 years of age.
- All patients with symptoms of Surgical Jaundice
- Raised serum bilirubin level
- Presence of dilatation of intrahepatic biliary duct of 2 mm or more or extrahepatic biliary duct of 4 mm or more in ultrasonography

Exclusion criteria:

- Patients with medical jaundice
- Cirrhosis of liver
- Not willing to participate.
- Too ill.

A detailed history of socio-demographic characteristics and clinical presentation, including age, sex, and symptoms like clay-colored stools, anorexia, weight loss, and pruritus, was recorded and correlated with examination findings such as jaundice, scratch marks, abdominal mass, and hepatomegaly. An initial diagnosis was made, followed by further evaluation with liver function tests to assess bilirubin and serum alkaline phosphatase levels. Ultrasonography of the hepatobiliary system and pancreas was performed to detect abnormalities in intra- and extra-hepatic biliary channels, the common bile duct, gallstones, or any abdominal mass. Advanced imaging modalities such as ERCP, CT scan, PTC, and MRCP were utilized if ultrasound was inconclusive or when indicated. The final diagnosis was established based on these investigations. After data collection, all entries were checked for consistency and tabulated using SPSS version 26 (IBM Corp., Armonk, NY). Frequencies and percentages were calculated for qualitative variables, while the arithmetic mean and standard deviation described quantitative variables. The independent sample t-test was used for comparing symmetrically distributed continuous variables, whereas Pearson's Chi-square test and Fisher's exact test were applied to categorical variables where appropriate. A p-value <0.05 was considered statistically significant. The results were then presented using tables, figures, and graphs as necessary. Ethical clearance was taken from the ERC of Dhaka Medical College and Hospital. Informed written consent was obtained from each of the participants.

III. RESULTS

A majority (44%) of the patients were aged between 51 to 60 years followed by 26% were above 60 years, 6% were below 30 years and 24% were 30 to 50 years. The mean age of the patients was 53.7±10.9 years. [Table 1]

Table 1: Distribution of the patients according to Age group (n=100)

Age group (years)	Frequency (n)	Percentage (%)
<30	6	6
30 to 50	24	24
51 to 60	44	44
>60	26	26
Mean± SD (ranged)	53.7±10.9 (18 to 72)	

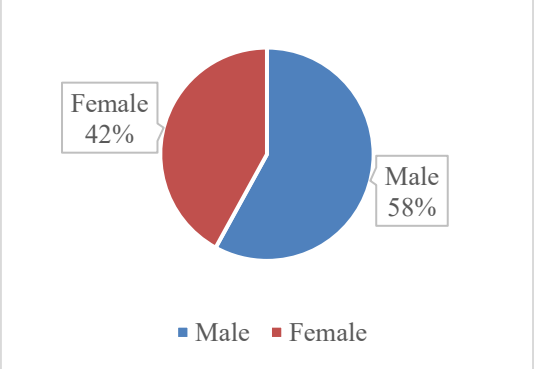

Figure 1: Distribution of the patients according to gender (n=100)

Among all, 58% of the patients were male and 42% were female.

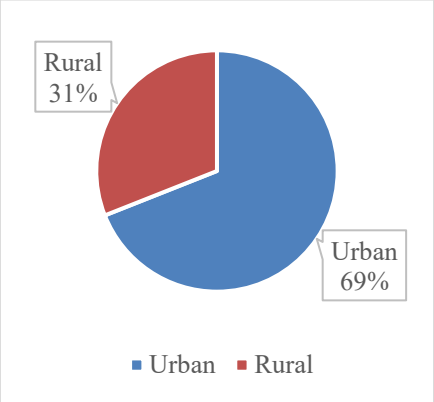

Figure- 2: Distribution of the patients according to residence (n=100)

Among all, 69% of the patients were from urban areas and 21% were from rural areas.

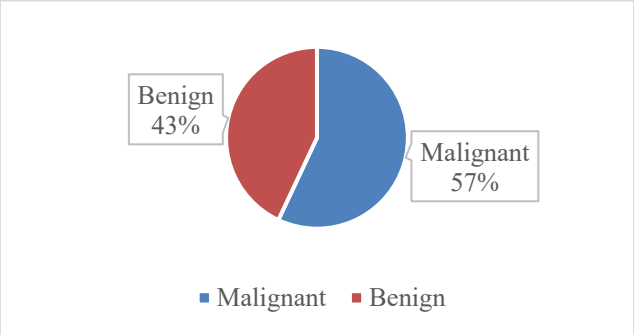

Figure 3: Distribution of the patients according to causes of surgical jaundice (n=100)

Among all, 57% of the patients had malignant surgical jaundice and 43% had benign surgical jaundice.

The most common malignant cause was carcinoma head of the pancreas (32%) followed by Cholangiocarcinoma (11%), periampullary carcinoma (9%), Carcinoma gallbladder (5%) Besides, the most common benign cause was Choledocholithiasis (28%) followed by Benign biliary stricture (13%) and Choledochal cyst (2%). [Table 2]

Table 2: Distribution of the patients according to type of malignant and benign cause (n=100)

Type of causes	Frequency (n)	Percentage (%)
Malignant cause		
Ca head of the pancreas	32	32
Periampullary Ca	9	9
Cholangiocarcinoma	11	11
Carcinoma Gallbladder	5	5
Benign cause		
Choledocholithiasis	28	28
Benign biliary stricture	13	13
Choledochal cyst	2	2

The older age group was found significantly higher among malignant cases. Gender was statistically similar in both groups. [Table 3]

Table 3: Association of sociodemographic factors with causes of surgical jaundice (n=100)

Socio-demographic factors	Malignant surgical jaundice	Benign Surgical jaundice	p-value
Age group (years)			
<30	2 (3.5)	4 (9.3)	0.003**
30 to 50	7 (12.3)	17 (39.5)	
51 to 60	32 (56.1)	12 (27.9)	

>60	16 (28.1)	10 (23.3)	
Gender			0.540*
Male	35 (61.4)	23 (53.5)	
Female	22 (38.6)	20 (46.5)	

P-value was determined by the *Chi-square test and **Fisher Exact test. Data was presented with frequency (%) and within parenthesis percentage over a column in total.

IV. DISCUSSION

In this, this study age range was 18 to 72 years whereas the majority (44%) of the patients were aged between 51 to 60 years followed by 26% above 60 years, 6% below 30 years and 24% were 30 to 50 years. The mean age of the patients was 53.7±10.9 years. In the study of Padhy et al., the age group varied from 3 years to 75 years and the average age was 55.5 years whereas 76% of patients were between the age group of 50-80 years[15]. Another study suggested that the occurrence of surgical jaundice was maximum in the 31-70 year age group[16]. Shukla et al. also revealed that Obstructive jaundice is more prevalent in the 5th and 6th decade of life[17]. Among all, 58% of the patients were male and 42% were female which correlates with similar studies by Padhy et al. revealed that among 100 cases of surgical jaundice, there was a slight male predominance at sex ratio 1:0.78[15]. A previous study also revealed that males are more affected (55.72%) with obstructive jaundice as compared to females with a male-female ratio of 1.25:1 [14]. However, Shukla et al. observed overall incidence of obstructive jaundice was higher in females compared to males[17]. However, a majority of the study observed male predominance over females[16,18]. Among all, 57% of the patients had malignant surgical jaundice and 43% had benign surgical jaundice. A similar type of etiological distribution has been found in the study done by Khan, in which it was observed that 58.71% of cases have malignant causes while 41.29% of cases have benign causes [14]. Gupta et al. also observed that malignant causes (63.89%) were more frequent than benign causes (36.11%)[19]. In this study, the most common malignant cause was carcinoma head of the pancreas followed by Cholangiocarcinoma, periampullary carcinoma, and Carcinoma gall bladder. Besides, the most common benign cause was Choledocholithiasis followed by Benign biliary stricture and Choledochal cyst. In the study of Odongo et al. among 42 participants with malignancies, Pancreatic head tumors were 27.8%, cholangiocarcinoma was 18.1%, duodenal cancers were 6.94%, and gall bladder cancer was 5.6% whereas the remaining 30 participants with benign etiologies, choledocholithiasis was 13.9%, biliary atresia was 9.7%, a pancreatic pseudocyst was 8.3%, Mirizzi syndrome was 6.9% and 1.4% each of chronic pancreatitis and choledochal cyst[18]. Khan explored the causes in detail whereas, among malignant causes, carcinoma of the pancreas was the commonest cause, responsible for about 1/4th of overall causes for the development of obstructive jaundice. Besides, among the benign causes, choledocholithiasis (gallstone in the common bile duct) was the commonest cause, responsible for nearly 1/3rd of overall causes for the development of obstructive jaundice [14]. In the study of Shukla et al. among malignancies periampullary carcinoma and advanced GB carcinoma occur with an equal frequency of 32 cases and choledocholithiasis (28%) is the most common benign aetiology[17]. Anand et al. observed most common cause of obstruction was choledocholithiasis followed by malignancy[16]. In the study of Gupta et al. among the malignant causes of obstructive jaundice, cancer head of the pancreas (60.87%) and cholangiocarcinoma (17.39%) were common causes whereas among the benign causes of obstructive jaundice, choledocholithiasis (76.92%) and benign biliary strictures (15.38%) were common causes. The older age group was found significantly higher among malignant cases than benign cases. Previous study also observed that patients with malignant causes of obstructive jaundice were older than the patients with benign causes of obstruction[19]. Another study also revealed that most of the patients with benign obstructive jaundice in the study were in the younger age group while malignant causes were in the older age group[20].

Limitations of The Study

The study was conducted in a single hospital with a small sample size. So, the results may not represent the whole community.

V. CONCLUSION

The study indicates a significant association between age and the causes of surgical jaundice, with malignant cases being more common in older individuals, while benign cases are more frequent in younger patients. However, no significant association was found between gender and the type of surgical jaundice. These findings highlight the importance of considering age as a key sociodemographic determinant in the early diagnosis and management of surgical jaundice.

VI. RECOMMENDATION

Based on the findings, early screening, and diagnostic evaluation should be prioritized for older individuals, as they are more likely to have malignant causes of surgical jaundice. Clinicians should incorporate age-specific risk assessment in their diagnostic approach to improve early detection and timely intervention. Further large-scale, multicenter studies are recommended to validate these associations and explore additional sociodemographic factors that may influence the etiology of surgical jaundice.

REFERENCES

[1]. Alammar NR. Evaluation of the management of obstructive jaundice in diwaniyia teaching hospital. AL-Qadisiya Med J. 2017;13(24):103–15.

[2]. Alrashed FM, Almalki Ahmed Y, Alflan A, Alzahrani M, Alrashed Fatima M, Alshahrani Saeed A, et al. Obstructive Jaundice: Incidence, Etiology and Management in Aseer Region, Saudi Arabia. Iajps. 2018;5(12):17102–9.

[3]. Bhutia K, Lachungpa T, Lamtha S. Etiology of obstructive jaundice and its correlation with the ethnic population of Sikkim. J Fam Med Prim Care. 2021;10(11):4189–92.

[4]. Dakhore DSD. Presentation, Etiology and Management of Obstructive Jaundice: A Prospective Study. J Med Sci Clin Res. 2018;6(7):207–15.

[5]. Soares PF da C, Gestic MA, Utrini MP, Callejas-Neto F, Chaim EA, Cazzo E. Epidemiological profile, referral routes and diagnostic accuracy of cases of acute cholangitis among individuals with obstructive jaundice admitted to a tertiary-level university hospital: A cross-sectional study. Sao Paulo Med J. 2019;137(6):491–7.

[6]. Duan B, Zhao X, Fan S, Zhou L, Zhang X. A rare case report of obstructive jaundice caused by mucus-producing cholangiocarcinoma. Med (United States). 2022;101(3):2021–3.

[7]. Goud S, Devi Bv, Kale PG, Lakshmi A, Reddy VvR. To study diagnostic efficacy of ultrasound and magnetic resonance cholangiopancreatography in obstructive jaundice. J Dr NTR Univ Heal Sci. 2020;9(4):217–21.

[8]. Fadahunsi OO, Ibitoye BO, Adisa AO, Alatise OI, Adetiloye VA, Idowu BM. Diagnostic accuracy of ultrasonography in adults with obstructive jaundice. J Ultrason. 2020;20(81):100–5.

[9]. Hanif H, Khan SA, Muneer S, Adil SO. Diagnostic accuracy of ultrasound in evaluation of obstructive jaundice with mrcp as gold standard. Pakistan J Med Sci. 2020;36(4):652–6.

[10]. Abou Bakr S, Elessawy H, Ghaly S, Elezz MA, Farahat A, Zaghloul MS. Diagnostic accuracy of endoscopic ultrasound in evaluation of patients with obstructive jaundice: single-center experience. Egypt Liver J. 2022;12(16):1–6.

[11]. Karki S, Joshi KS, Regmi S, Gurung RB, Malla B. Role of ultrasound as compared with ERCP in patient with obstructive jaundice. Kathmandu Univ Med J. 2013;11(43):237–40.

[12]. Mubassira M, Muhib MM, Abeed-Ul-Haque S, Khanam S, Hasan MF. Study of an outbreak of acute jaundice syndrome at the University of Rajshahi, Bangladesh: socio-demographic and clinical manifestations. 2024.

[13]. Park SM. Sex/Gender Differences in Pancreatic and Biliary Diseases. InSex/Gender-Specific Medicine in Clinical Areas 2024 Jun 4 (pp. 219-230). Singapore: Springer Nature Singapore.

[14]. Siddique K, Ali Q, Mirza S, Jamil A, Ehsan A, Latif S, Malik AZ. Evaluation of the aetiological spectrum of obstructive jaundice. J Ayub Med Coll Abbottabad. 2008 Dec 1;20(4):62.

[15]. Padhy B, Murmu D, Samal D, Jha S. Clinical study of surgical jaundice: an institutional experience. Int Surg J. 2017;5(1):138.

[16]. Anand S, Panda C, Senapati AT, Behera MR, Thatei C. a Study on Incidence, Clinical Profile, and Management of Obstructive Jaundice. J Evid Based Med Healthc. 2016;3(59):3139–45.

[17]. Shukla S, Kharat PR, Kumar K. Clinicopathological study on patients presenting with obstructive jaundice. Int Surg J. 2018;5(2):705

[18]. Odongo CN, Dreque CC, Mutiibwa D, Oyania FBF, Sikhondze MM, Acan M, et al. Etiology, Clinical Presentations, and Short-Term Treatment Outcomes of Extrahepatic Obstructive Jaundice in South-Western Uganda. Clin Exp Gastroenterol. 2022;15(6):79–90

[19]. Gupta AK, Singh A, Goel S, Tank R. Profile and pattern of obstructive jaundice cases from a tertiary care teaching hospital of Uttar Pradesh. Int Surg J. 2017;4(2):743–6

[20]. Chalya PL, Kanumba ES, McHembe M. Etiological spectrum and treatment outcome of Obstructive jaundice at a university teaching hospital in northwestern Tanzania: A diagnostic and therapeutic challenges. BMC Res Notes. 2011;4(1):147.