

## Oncology | Research article

# ERCP in Bilio-pancreatic malignancy: Demographic profile among Bangladeshi patients

Md. Akmat Ali<sup>1</sup>, Richmond Ronald Gomes<sup>2\*</sup><sup>1</sup>Associate Professor, Department of Hepatology, Ad-din Women's Medical College<sup>2</sup>Associate Professor, Department of Medicine, Ad-din Women's Medical College

Submitted: 06 March 2021

Approved: 09 April 2021

Published: 10 April 2021



**Address for correspondence:** Dr. Richmond Ronald Gomes, Associate Professor of Medicine, Ad-din Women's Medical College Hospital, Dhaka, Bangladesh.  
E-mail: [rrichi.dmc.k56@gmail.com](mailto:rrichi.dmc.k56@gmail.com).  
Orchid ID: 0000000225117972

**How to cite this article:** Ali M A, Gomes R. R. ERCP in Bilio-pancreatic malignancy: Demographic profile among Bangladeshi patients. G Med Sci. 2021; 2(2): 004-009. <https://www.doi.org/10.46766/thegms.oncol.21030603>

**Copyright:** © 2021 Md. Akmat Ali, Richmond Ronald Gomes. This is an Open Access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

## Abstract

**Introduction:** Outcome of most of the biliary and pancreatic malignancy is not good. Demography and involvement of different sites of these malignancies by endoscopic retrograde cholangiopancreatography (ERCP) are not widely studied in Bangladesh. We have studied ERCP based different biliary and pancreatic malignancy and their demographic characteristics.

**Methods:** Patients with radiological evidence of biliary tree dilatation along with Cancer antigen 19.9 (CA 19.9) more than 400 unit/ml and strictures were confirmed with endoscopic retrograde cholangiopancreatography. History of biliary surgery or trauma, stone, ascariasis, pregnancy, extra pancreatic biliary abdominal tumour and HCC were excluded. The study was done on patients whose ERCP were performed between 2010 to 2015 at the Crescent Gastro Liver Hospital in Dhaka, Bangladesh.

**Results:** Among 469 patients, cholangiocarcinoma, ampullary carcinoma, carcinoma of gall bladder and carcinoma of head of pancreas were 246 (52.7%), 133 (28.5%), 72 (15.4%) and 18 (3.9%) respectively. Mean age with range for cholangiocarcinoma were 54.5+13.9 (20-96) years, male was 137 (55.7%), female was 109 (44.3%). Mean age with range for ampullary carcinoma were 54.6+ 15.3 (20-90) years, male was 87 (65.4%) and female was 46 (34.6%). In Carcinoma of gall bladder mean age with range was 54.9+13.6 (30-80) years, male was 30 (41.7%) and female was 42(58.3%). In carcinoma of head of pancreas mean age with range was 59.8+18.1 (29- 89) years, male was 11 (61.1%) & female was 7 (38.9%). Total upper, middle and lower common bile duct (CBD) stricture seen in 199 (42.6%), 65 (38.8%) and 206 (44.1%) patients respectively with significant overlapping in between.

**Conclusion:** Cholangiocarcinoma was the commonest one. Stricture in the lower part of biliary tract was commonest. There was male predominance in all biliary carcinomas except carcinoma of gall bladder.

**Keywords:** Cholangiocarcinoma, ampullary carcinoma, carcinoma of gall bladder, carcinoma of head of pancreas, endoscopic retrograde cholangiopancreatography (ERCP).

## Introduction

Among pancreatobiliary malignancy, cancer of the gallbladder, ampulla of Vater, extra hepatic bile duct cancer and carcinoma of head of the pancreas are relatively common. Most of them are associated with high mortality rate and the options of systemic therapy are very limited. Biliary obstruction due to malignancy may result bad outcome in spite of all available treatment. There is paucity of information about prevalence of biliary tract malignancy and their radiological findings during ERCP in Bangladesh.

In the United States, biliary tract cancer is the sixth most common alimentary tract cancer, diagnosed less frequently than colorectal, pancreatic, liver, stomach, or esophageal cancers and accounting for only slightly more cases than small intestinal or anal cancer [1].

Cholangiocarcinoma is the most common biliary malignancy and the second most common hepatic malignancy after hepatocellular carcinoma (HCC) [2]. Cholangiocarcinoma accounts for 3% of all gastrointestinal tumors. Over the past 3 decades, the overall incidence of CCA appears to have increased [3].

According to Randi G et al. and another study gallbladder cancer is one of the few cancers are observed more frequently among women than men; rates are higher among American Indians and Hispanic groups than others [4][5]. About 90% of biliary tract cancer is not diagnosed until the disease became locally advanced or metastatic [6].

Pancreatic tumors are the fifth most common cause of cancer-related mortality in the Western world [7] [8]. The most of them are located in the head; bile duct and duodenum are often affected for their anatomical proximity. Strictures of the biliary tract may occur at an early stage of the disease, patients present with jaundice and itching as a symptom; for these they seek for medical help. However, gastric outlet obstruction due to duodenal infiltration of the tumor is typically a late feature in an already advanced tumor stage [9].

At the time of diagnosis up to 90% of patients with pancreatic tumors come with obstructive jaundice. Liver dysfunction and even hepatic failure may occur due to bile stasis and cholangitis. Cholangitis is more frequently found in patients with ampullary lesions than in patients with pancreatic cancer. Relief of the obstructive jaundice causes a dramatic increase in the quality of life of patients and should therefore always be accomplished [10].

Neoplasms of the ampulla of Vater account for only 0.5% of all gastrointestinal malignancies [11]. Obstructive jaundice is the most common presenting symptom of ampullary cancer (85%) [12-14] caused by compression of the distal bile duct by the tumor.

## Materials and methods

A retrospective review of consecutive 469 patients who had undergone ERCP for biliopancreatic malignant strictures of different causes. The study was performed between January 2010 and December 2015 at the Crescent Gastroenterology Hospital, Dhaka, Bangladesh, a specialized centre for Hepatobiliary endoscopic intervention. The information about ERCP patients are retrieved from this hospital's database including ERCP room computer. The institutional ethics committee approved this study. A search of the malignant biliopancreatic obstruction database was performed to identify all consecutive ERCP reports during the study period. The database included patients' demographic data and USG, CT scan, MRCP and serum CA-19-9 reports.

### Demographics

The age, gender distribution of the study population and their cancer subgroups were analyzed.

### Pathological characteristics

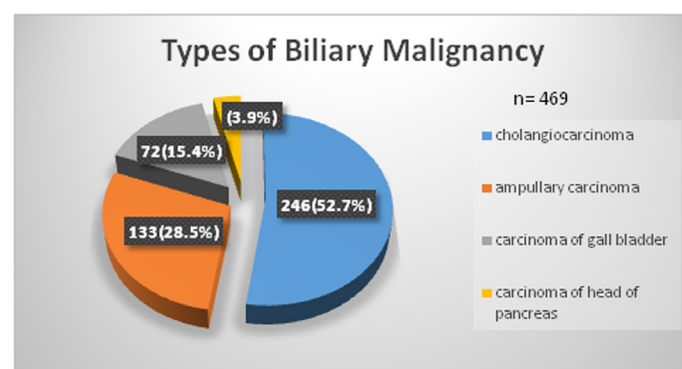
Biliopancreatic cancers were identified and sub-grouped as pancreatic, ampullary, biliary and gall bladder cancer to identify the proportions of each cancer during ERCP.

### Statistical analysis

Statistical methods used in this study are mostly limited to simple descriptive analysis were performed in SPSS version 20.

## Results

Among 469 patients, cholangiocarcinoma, ampullary carcinoma, carcinoma of gall bladder and carcinoma of head of pancreas were 246 (52.7%), 133 (28.5%), 72 (15.4%) and 18 (3.9%) respectively. (Fig. 1)



**Figure 1: Types of Biliary Malignancy**

Mean age with range for cholangiocarcinoma were 54.5+13.9 (20-96) years, male was 137 (55.7%), female was 109 (44.3%). Mean age with range for ampullary carcinoma were 54.6+ 15.3 (20-90) years, male was 87(65.4%) and female was 46(34.6%). In Carcinoma of gall bladder mean age with range was 54.9+13.6 (30-80)

years, male was 30(41.7%) and female was 42(58.3%), In carcinoma of head of pancreas mean age with range was 59.8+18.1 (29- 89) years, male was 11(61.1%)&female was 7(38.9%).(Fig. 2 and Fig. 3)

## Discussion

Geographic variation in the rates for extrahepatic bile duct cancer has been noted in the literature [15-17]. In this study the most common pathology for which ERCP were performed was cholangiocarcinoma. But according to Chandrasegaram MD et al. the most common pathology for which a Pancreatoduodectomy was performed was pancreatic cancer 56%, followed by ampullary cancer 25%, biliary cancer 15% and duodenal cancer 4% [18].

Felipe A et al. found during the 1992–2009 period 19,031 biliary tract cancers of gallbladder 41.3%, extrahepatic bile duct 32.9% and ampulla of Vater 19.8% [19].

A recent large Chinese series by Chen et al. of 501 periampullary cancers found that ampullary carcinomas represented the majority of cancers with a value of 50%, followed by pancreatic cancer 34%, biliary cancer 10% and duodenal cancer 5% [20]. Gallbladder cancer rates were lowest among whites highest among American Indian/Alaska Natives [19]. However, many publications have continued to group these entities, which is dominated by gallbladder cancer in many but not all populations [4] [21,22].

Ampulla of Vater cancer represents 20% of all biliary cancers in the US. A previous report found that rates for this cancer increased between 1973 and 2005 for all racial groups combined [23]. Primary ampullary tumors are rare, with an incidence of approximately four to six cases per million population [14][24,25]. They account for only 6 percent of lesions that arise in the periampullary region [26].

Ampulla of Vater cancer represents 20% of all biliary cancers in the US. A previous report found that rates for this cancer increased between 1973 and 2005 for all racial groups combined [24]. Gallbladder cancer rates were lowest among whites and highest among American Indian/Alaska. Extrahepatic bile duct cancer rates also were lowest among whites and blacks and highest among American Indian/Alaska Natives- more than twice those among whites, the rates for ampulla of Vater were lowest among whites and blacks and highest among Hispanics followed by Asian [19]. For gallbladder cancer, there was a clear female predominance. In contrast, there was a male predominance for the two other specific anatomic sites [19].

The major determinant of biliary tract cancer, especially gallbladder cancer, is a history gallstones [21][27], as well as obesity and diabetes [28][29].

Geographic variation in the rates for extrahepatic bile duct cancer has been noted in the literature [15-17][29]. In a recent large three-decade study of 2,564 resected

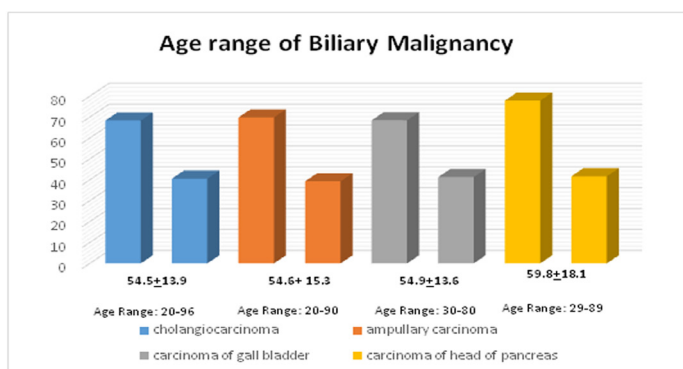


Figure 2: Age Range of Biliary Malignancy

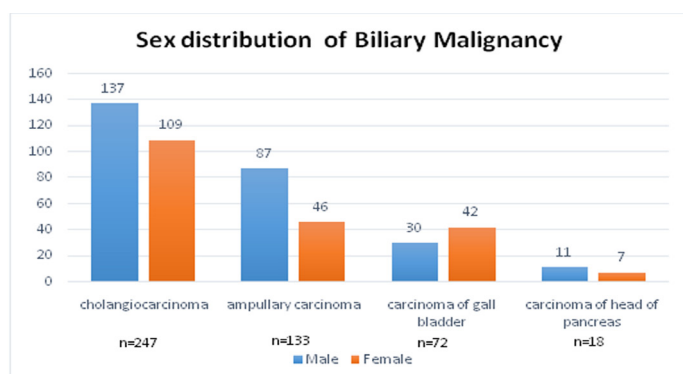


Figure 3: Sex distribution of Biliary Malignancy

Total upper, middle and lower common bile duct (CBD) stricture seen in 199 (42.6%), 65 (38.8%) and 206 (44.1%) patients respectively with significant overlapping in between. (Fig. 4)

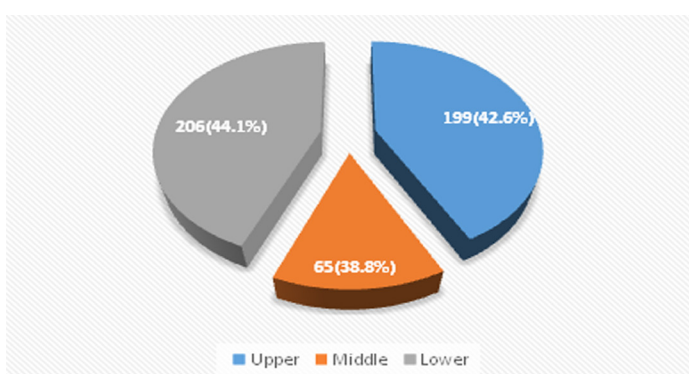


Figure 4: Percentage of different parts of CBD stricture (overlapping)

perampullary cancers, by He et al., the distribution of resected pancreatic, ampullary, biliary and duodenal carcinomas were 66%, 16%, 12%, and 6%, respectively [29].

## Age

With the exception of patients with primary sclerosing cholangitis (PSC), cholangiocarcinoma (CCA) is uncommon before age 40 years. According to a small scale study report, median age of biliary malignancy at diagnosis was 62 years (range: 31–81 years), 69% were intrahepatic cholangiocarcinoma, and 61% was male [30]. The average age at diagnosis of sporadic ampullary carcinomas is 60–70 years old [31–34].

The median age of all the patients undergoing a Pancreaticoduodenectomy for a cancer was 67 years [18]. Patients with pancreatic cancer had a median age of 64 years, those with ampullary cancer had a median age of 69 years, biliary cancer median age 66 years [18]; males 58% and females 42% aged between 26 and 86 years [18].

Gall bladder carcinoma was diagnosed in patients with the mean age was 69.4 years [35]. Patient's age with ampullary cancer in a study is slightly more than with pancreatic cancer, median age at diagnosis was 62 years [18].

## Gender

Gallbladder cancer incidence was higher in females than in males, while extrahepatic bile duct and ampulla of Vater cancer incidence rates were higher in males [19]. Men have a slightly higher incidence of cholangiocarcinoma and mortality from the cancer than women which were 58% males and 42% females respectively [36]. A higher rate of ampullary cancer is observed in men [24]. A study report which was described by Chen Z et al. of gall bladder cancer, 70.0% were females and 30.0% were males [37]. Gall bladder cancer was diagnosed more in women than men in another study where male female ratio was 1:1.14 [35].

## Conclusion

Biliary and pancreatic cancers often leading to distressing consequences including severe itching; ERCP often necessary to relieve symptoms. Sites of biliary strictures sometimes important for therapeutic ERCP and reconstructive surgery. This study report has both similarities and dissimilarities (as there is variable lifestyle across different parts of the world) with the previous studies and may be helpful for further multicenter study to assess the demographic changing pattern of biliary and pancreatic malignancy.

**Funding:** None

**Conflict of Interests:** None declared

**Ethical Approval:** Not required

**Limitation of study:** Study population is small and no follow up of the cases were possible

## References

1. Howlader NNA, Krapcho M, Neyman N, Aminou R, Altekruse SE, Kosary CL, Ruhl J, Tatalovich Z, Cho H, Mariotto A, Eisner MP, Lewis DR, Chen HS, Feuer EJ, Cronin KA, editors. SEER Cancer Statistics Review, 1975–2009 (Vintage 2009 Populations) National Cancer Institute; Bethesda, MD: 2012. based on November 2011 SEER data submission, posted to the SEER web site, April 2012.)
2. Welzel TM, McGlynn KA, Hsing AW, O'Brien TR, Pfeiffer RM. Impact of classification of hilar cholangiocarcinomas (Klatskin tumors) on the incidence of intra- and extrahepatic cholangiocarcinoma in the United States. *J Natl Cancer Inst.* 2006;98:873–5.
3. Khan SA, Davidson BR, Goldin RD, Heaton N, Karani J, Pereira SP, Rosenberg WM, Tait P, Taylor-Robinson SD, Thillainayagam AV, Thomas HC, Wasan H. British Society of G. Guidelines for the diagnosis and treatment of cholangiocarcinoma: an update. *Gut.* 2012;61:1657–69.
4. Randi G, Franceschi S, La Vecchia C. Gallbladder cancer worldwide: geographical distribution and risk factors. *Int J Cancer.* 2006;118:1591–602.
5. Goodman MT, Yamamoto J. Descriptive study of gallbladder, extrahepatic bile duct, and ampullary cancers in the United States, 1997–2002. *Cancer Causes Control.* 2007;18:415–22.
6. Hezel AF, Zhu AX. Systemic therapy for biliary tract cancers. *Oncologist* 2008; 13: 415–423 [PMID: 18448556 DOI: 10.1634/theoncologist.2007-0252]
7. DiMagno EP, Reber HA, Tempero MA. AGA technical review on the epidemiology, diagnosis, and treatment of pancreatic ductal adenocarcinoma.

- ma. American Gastroenterological Association. *Gastroenterology*. 1999;117:1464–84.
8. Greenlee RT, Murray T, Bolden S, Wingo PA. Cancer statistics, 2000. *CA Cancer J Clin*. 2000;50:7–33.
  9. Hidalgo M. Pancreatic cancer. *N Engl J Med*. 2010;362:1605–1617.
  10. Abraham NS, Barkun JS, Barkun AN. Palliation of malignant biliary obstruction: a prospective trial examining impact on quality of life. *GastrointestEndosc*. 2002;56:835–41.
  11. Surveillance, Epidemiology and End Results (SEER), SEER stat database: Incidence-SEER regs limited use.
  12. Bakkevold KE, Arnesjø B, Kambestad B. Carcinoma of the pancreas and papilla of Vater--assessment of resectability and factors influencing resectability in stage I carcinomas. A prospective multicentre trial in 472 patients. *Eur J SurgOncol*. 1992;18:494–507.
  13. Walsh DB, Eckhauser FE, Cronenwett JL, Turcotte JG, Lindenauer SM. Adenocarcinoma of the ampulla of Vater. Diagnosis and treatment. *Ann Surg*. 1982;195:152–157.
  14. Neoptolemos JP, Talbot IC, Carr-Locke DL, Shaw DE, Cockleburgh R, Hall AW, Fossard DP. Treatment and outcome in 52 consecutive cases of ampullary carcinoma. *Br J Surg*. 1987;74:957–961.
  15. Hsing AW, Gao YT, Devesa SS, Jin F, Fraumeni JF, Jr. Rising incidence of biliary tract cancers in Shanghai, China. *Int J Cancer*. 1998;75:368–70.
  16. Shin HR, Oh JK, Masuyer E, Curado MP, Bouvard V, Fang Y, Wiangnon S, Sripan B, Hong ST. Comparison of incidence of intrahepatic and extrahepatic cholangiocarcinoma--focus on East and South-Eastern Asia. *Asian Pac J Cancer Prev*. 2010;11:1159–66.
  17. Lepage C, Cottet V, Chauvenet M, Phelip JM, Bedenne L, Faivre J, Bouvier AM. Trends in the incidence and management of biliary tract cancer: a French population-based study. *J Hepatol*. 2011;54:306–10.
  18. Manju D Chandrasegaram, Su C Chiam, John W Chen, Aisha Khalid, Murthy L Mittinty, Eu L Neo, Chuan P Tan, Paul M Dolan, Mark E Brooke-Smith, Harsh Kanhere, and Chris S Worthley. Distribution and pathological features of pancreatic, ampullary, biliary and duodenal cancers resected with pancreaticoduodenectomy. *World J SurgOncol*. 2015; 13: 85.
  19. Felipe A. Castro, Jill Koshiol, Ann W. Hsing, and Susan S. Devesa. Biliary tract cancer incidence in the United States- demographic and temporal variations by anatomic site. *Int J Cancer*. 2013 Oct 1; 133(7): 1664–1671.
  20. Chen SC, Shyr YM, Wang SE. Long term survival after pancreaticoduodenectomy for periampullary adenocarcinomas. *HPB*. 2013;15:951–7. doi: 10.1111/hpb.12071.
  21. Randi G, Malvezzi M, Levi F, Ferlay J, Negri E, Franceschi S, La Vecchia C. Epidemiology of biliary tract cancers: an update. *Ann Oncol*. 2009;20:146–59.
  22. Saika K, Matsuda T. Comparison of time trends in gallbladder cancer incidence (1973–1997) in East Asia, Europe and the USA, from Cancer Incidence in Five Continents Vols IV–VIII. *Jpn J ClinOncol*. 2007;37:974–6.
  23. Benhamiche AM, Jouve JL, Manfredi S, et al. Cancer of the ampulla of Vater: results of a 20-year population-based study. *Eur J GastroenterolHepatol* 2000; 12:75.
  24. Albores-Saavedra J, Schwartz AM, Batich K, Henson DE. Cancers of the ampulla of vater: demographics, morphology, and survival based on 5,625 cases from the SEER program. *J SurgOncol* 2009; 100:598-605.
  25. Goodman MT, Yamamoto J. Descriptive study of gallbladder, extrahepatic bile duct, and ampullary cancers in the United States, 1997-2002. *Cancer Causes Control* 2007; 18:415.
  26. Brennan MF. Surgical management of peripancreatic cancer. In: *Atlas of Surgical Oncology*, Bland KL, Karakoukis CP, Copeland, EM (Eds), WB Saunders Company, Philadelphia 1995. p.473.

27. Hsing AW, Gao YT, Han TQ, Rashid A, Sakoda LC, Wang BS, Shen MC, Zhang BH, Niwa S, Chen J, Fraumeni JF., Jr Gallstones and the risk of biliary tract cancer: a population-based study in China. *Br J Cancer*. 2007;97:1577–82.
28. Cuevas A, Molina A, Rigotti A, Miquel JF, Marshall G, Reyes S, Nervi F. Trends in obesity and diabetes prevalence in a Chilean urban population: 1993–2001. *MetabSyndrRelatDisord*. 2008;6:219–22.
29. He J, Ahuja N, Makary MA, Cameron JL, Eckhauser FE, Choti MA, et al. 2564 resected periampullary adenocarcinomas at a single institution: trends over three decades. *HPB*. 2014;16:83–90. doi: 10.1111/hpb.12078.
30. Agarwal R, Sendilnathan A, Siddiqi NI, Gulati S, Ghose A, Xie C, Olowokure OO. Advanced biliary tract cancer: clinical outcomes with ABC-02 regimen and analysis of prognostic factors in a tertiary care center in the United States. *JGastrointestOncol*. 2016 Dec;7(6):996-1003.)
31. Talamini MA, Moesinger RC, Pitt HA, et al. Adenocarcinoma of the ampulla of Vater. A 28-year experience. *Ann Surg* 1997; 225:590.
32. Griffioen G, Bus PJ, Vasen HF, Verspaget HW, Lamers CB. Extracolonic manifestations of familial adenomatous polyposis: desmoidtumours, and upper gastrointestinal adenomas and carcinomas. *Scand J Gastroenterol Suppl*. 1998. 225:85-91.
33. Berndt C, Haubold K, Wenger F, et al. K-ras mutations in stools and tissue samples from patients with malignant and nonmalignant pancreatic diseases. *Clin Chem*. 1998 Oct. 44(10):2103-7.
34. Iacono C, Verlato G, Zamboni G, Scarpa A, Montresor E, Capelli P, et al. Adenocarcinoma of the ampulla of Vater: T-stage, chromosome 17p allelic loss, and extended pancreaticoduodenectomy are relevant prognostic factors. *J Gastrointest Surg*. 2007 May. 11(5):578-88.
35. Cavallaro A, Piccolo G, Di Vita M, Zanghì A, Cardì F, Di Mattia P, Barbera G, Borzi L, Panebianco V, Di Carlo I, Cavallaro M, Cappellani A. *Int J Surg*. 2014;12Suppl 2:S108-19.
36. Everhart JE, Ruhl CE. Burden of digestive diseases in the United States Part III: Liver, biliary tract, and pancreas. *Gastroenterology*. 2009;136:1134–44.
37. Zhiqiang Chen, Wen Gao, LiyongPu, Long Zhang, Guoyong Han, Qin Zhu, Xiangcheng Li, Jindao Wu and Xuehao Wang. Impact of insurance status on the survival of gallbladder cancer patients. *Oncotarget*. 2017; 8:51663-51674.