

Frequency of Ethnicity and Causative Factors of Hepatocellular Carcinoma

ABDUL GHANI RAHIMOON¹, SAJAN SAWAI², HIRA LAGHARI³, NAND LAL SEERANI⁴, ZAHEER HUSSAIN MEMON⁵, SHABANA LAKHO⁶

¹Associate Professor of Medicine, Liaquat university Hospital Hyderabad

²Assistant professor of Gastroenterology, Indus Medical College TM Kahn

³Registrar of gastroenterology department, LUMHS/ Jamshoro

⁴Assistant professor of Gastroenterology, Liaquat university Hospital Hyderabad

⁵Associate Professor of Medicine, Indus Medical College TM Kahn

⁶Assistant professor of Gastroenterology, CMCH Larkana

Corresponding author: Sajan sawai, Email: drsajansawai@gmail.com

ABSTRACT

Objective: To determine the frequency of ethnicity and other etiological factors of hepatocellular carcinoma.

Methodology: This cross-sectional study was conducted at the Liaquat University Hospital Hyderabad, Department of gastroenterology. The study occurred from March 2018 to February 2019 for a total period of one year. All the patients diagnosed as the cases of hepatocellular carcinoma; age more than 20 years of both genders were included. All the patients were assessed regarding their ethnicity and risk factors of hepatocellular carcinoma. A self-made study proforma was used for the data collection and data was analyzed by using the SPSS version 26.

Results: A total of 80 patients of hepatocellular carcinoma were studied, their average age was 53.12+9.69 years, average CLD known duration was 05.40+3.90 years and the average known duration of HCC was 01.17+0.79 years. Males were in majority 76.3% and 40.0% of the cases had advanced disease. According to the ethnicity of the cases, Sindhi patients were 70.0%, followed by 6.3% were Punjabi, 1.3% were Pathan, 7.5% were Baloch and 15.0% were others. HCV was the most common cause 83.8%, 7.5% cases had HBV, followed by 2 cases had HBV+HDV and one case had HCV and HBV co-infection, while four cases were NBNC HCC patients. Tumor stage was statistically insignificant according to ethnicity (p=0.495).

Conclusion: Sindhi and Punjabi population was observed to be mostly affected and HCV was concluded the most common causative factor of hepatocellular carcinoma.

Keywords: Ethnicity, causes, HCC

INTRODUCTION

One of the main causes of cancer-related mortality is hepatocellular carcinoma (HCC), the most prevalent primary liver cancer, particularly in nations with a higher prevalence of HCC.^{1,2} Hepatocellular Carcinoma is a very lethal malignancy with few effective treatments available. Its fatality runs parallel to its incidence.³ The formation and progression of HCC are greatly influenced by chronic liver inflammation and damage. The incidence rates of HCC are influenced by a number of variables, including age, gender, ethnicity and the demographic regions.³ The main risk factors for HCC are chronic infections of the hepatitis B or hepatitis C virus, carcinogens (such as contaminated food, tobacco use, and environmental toxins), and genetic defects.³ One of the most prevalent malignancies and the third leading cause of cancer-related death worldwide is hepatic carcinoma.^{4,5} According to estimates, there have been approximately 840,000 new instances of hepatic cancer in 2018 and about 782,000 deaths globally, with an upward trend in the cases frequency.^{4,5} The scenario is made worse by the scenario's bad prognosis, which results in a heavy socioeconomic weight.^{4,6} Men in their mid- to late-life are most likely to develop HCC. Anorexia and weight loss are common constitutional symptoms that individuals present with.⁷ Pain of the abdomen and discomfort are common complaints from patients, and they could become acute if there has been a tumor-related haemorrhage.⁷ Upon examination, there can be a palpable, irregular hepatic mass. A hepatic bruit could be audible since HCC is a particularly vascular malignancy. If HCC-related clinical signs and symptoms have appeared, the prognosis is poor.⁷ Hepatobiliary carcinoma occurrence has been shown to be steadily rising. Hepatobiliary malignancies are the most prevalent malignancy in adult males and account for 70% of all cancers, according to data from a trustworthy hospital-based database in Pakistan.^{8,9} Current understanding of HCC in the Pakistani community is limited and mostly based on experiences from isolated centers.⁸ On other hand it is reported that the significant inequalities in HCC have been seen in recent years amongst various racial/ethnic populations in the United States.¹⁰ Hispanics saw the largest increase in HCC incidence, by about 36 percent.¹⁰ However this study has been done to evaluate the frequency of ethnicity and other risk factors of hepatocellular carcinoma.

MATERIAL AND METHODS

This cross-sectional study was conducted at the Liaquat University Hospital Hyderabad, Department of gastroenterology. The study occurred from March 2018 to February 2019 for a total period of one year. All the patients diagnosed as the cases of hepatocellular carcinoma; age more than 20 years of both genders were included. All of the patients who declined to take part in the survey were not included. Complete medical history, clinical examination and required laboratory investigations were done. All the patients were assessed regarding their ethnicity and risk factors of hepatocellular carcinoma. A self-made study proforma was used for the data collection and data was analyzed by using the SPSS version 26. Chi-square was applied and a p-value <0.05 was considered as significant.

RESULTS

A total of 80 patients of hepatocellular carcinoma were studied, their average age was 53.12+9.69 years, average CLD known duration was 05.40+3.90 years and the average known duration of HCC was 01.17+0.79 years. Out of all, males were 76.3% and females were 23.8%. History of ascites was in 68.8% of the cases and 40.0% of the cases had advanced disease. Table 1

According to the ethnicity of the cases, Sindhi patients were 70.0%, followed by 6.3% were Punjabi, 1.3% were Pathan, 7.5% were Baloch and 15.0% were others (Urdu speaking). Fig:1

Table 1: Descriptive statistics of demographic characteristics n=80

Variables	Statistics		
Age (years)	53.12+9.69		
Duration of CLD known (years)	05.40+3.90		
Duration of HCC carcinoma (years)	01.17+0.79		
Gender	Males	61	76.3
	Females	19	23.8
History of ascites	Yes	55	68.8
	No	25	31.3
Tumor stages	Advance	32	40.0
	Not advanced	48	60.0

As per causative factors, the HCV was the most common cause 83.8%, 7.5% cases had HBV, followed by 2 cases had

HBV+HDV and one case had HCV and HBV co-infection, while four cases were NBNC HCC patients. Table.2

Tumor stage was statistically insignificant according to ethnicity (p=0.495) as shown in table.3

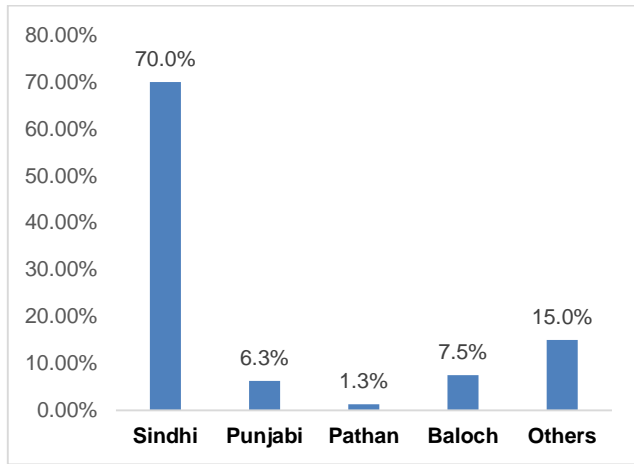


Fig:1: Frequency of ethnicity of the patients n=80

Table 2: Causes of the HCC n=80

Variables	Statistics	
	Count	Percentage
Causes of HCC	HCV	83.8
	HBV	7.5
	HCV/HBV	1.3
	HBV/HDV	2.5
	NBNC	5.0
Total	80	100.0%

Table 3: Ethnicity of patients as per tumor stage n=58

Variables	Tumor stage		Total	p-value
	Advance	Not advance		
Ethnicity	Sindhi	16	41	0.495
	Punjabi	3	4	
	Pathan	1	1	
	Baloch	1	2	
	Urdu speaking	5	10	
Total	32	26	58	

DISCUSSION

Hepatocellular carcinoma (HCC) is the sixth most common cause of incident cases and the fourth most common cause of cancer-related fatalities.¹¹ Even in developed nations, whereas survival for > 5 years is only found in 12% of patients and individuals with advanced HCC phenotype have much lower survival rates, the prognostic value of HCC is poor due to a lack of early screening and efficient surveillance programmes.^{11,12} The average age at which CLD develops is substantially lower in emerging nations like Pakistan than it is in developed nations, indicating that people in this region of the world are being infected earlier.¹³

In this study average age of hepatocellular carcinoma patients was 53.12+9.69 years and males were in majority 76.3%, while females were 23.8%. On other hand Haque S et al¹⁴ reported that the males were found to have a frequency of 78.3% and females to have a proportion of 21.6% of HCC. Males' average age was 49.48 years, with a range of 20 to 80 years, while females' average age was 58.40 years, ranging from 33 to 75 years.¹⁴ Consistently Khurshid H et al⁷ reported that the HCC is more commonly detected in men older than 30, in the high incidence regions, the male to female ratio is 5:1, although while the ratio is only 2:1 in low prevalence areas. Globally, it is generally acknowledged that males develop HCC at a higher rate than females do.¹⁵ Behaviour, metabolic and the endocrine factors all contribute to this gender discrepancy. The occurrence of inflammation-driven HCC is 3 times greater in men than in women,

and it is thought that estrogen and androgen levels are related to changes in HBV transcription and replication.^{15,16}

In this study HCV was the most common cause 83.8%, 7.5% cases had HBV, followed by 2 cases had HBV+HDV and one case had HCV and HBV co-infection, while four cases were NBNC HCC patients. Consistently Munaf A et al¹⁷ reported that the overall prevalence of HCC caused by HBV and HCV was correspondingly 66.0 and 34.0 percent. HCC at older ages was more likely to occur in HCV patients. On other hand it is demonstrated that the chronic viral hepatitis (HBV and HCV) continues to be a prominent factor in the development of HCC all over the globe, the burden of HCC caused by alcohol and NASH is increasing.¹⁸ The pathogenesis of HCC brought on by viruses involves oxidative stress, cell signaling pathway dysregulation, and liver inflammation.¹⁸ HBV is especially cancer-causing because, unlike HCV, it integrates into cellular DNA and endures virological inhibition by nucleotide analogues.¹⁸

In this study Sindhi patients were 70.0%, followed by 6.3% were Punjabi, 1.3% were Pathan, 7.5% were Baloch and 15.0% were others (Urdu speaking), while tumor stage was statistically insignificant according to ethnicity (p=0.495). Sindhi community was most common in this study and this may be because this study has been done in Sindh and mostly patients were from rural areas of the Sindh. There was no such studies found regarding association of ethnicity and HCC at local level, while studies were seen regarding association of virological factors (HCV and HBV) and ethnicity, in which authors found disparities in the prevalence of HCV and HBV according to the ethnicity.^{13,19} Nevertheless, few researches have indicated empirical data that direct the focused efforts of HCC prevention at subcounty regions, despite the abundance of research on the aetiology of HCC.²⁰ The etiologies of HCC, which can differ by race/ethnicity and location, must be taken into account while developing effective preventive measures.²⁰ The identification of high-risk categories and the setting of priorities for racial/ethnic-specific initiatives for HCC prevention and management make it clear that describing patterns of HCC occurrence at a regional level for each racial/ethnic group has great public health importance.²⁰

CONCLUSION

As per study conclusion the Sindhi and Punjabi population was observed to be mostly affected and HCV was concluded the most common causative factor of hepatocellular carcinoma. Due to the lack of local studies regarding association of ethnicity and HCC and small sample size of this study with several other limitations, further large-scale studies are recommended on this subject.

REFERENCES

- Lin YJ, Lin CN, Sedghi T, Hsu SH, Gross CP, Wang JD, Wang SY. Treatment patterns and survival in hepatocellular carcinoma in the United States and Taiwan. *PLoS one*. 2020 Oct 14;15(10):e0240542.
- McGlynn KA, Petrick JL, London WT. Global epidemiology of hepatocellular carcinoma: an emphasis on demographic and regional variability. *Clin Liver Dis*. 2015; 19(2):223–238
- Suresh D, Srinivas AN, Kumar DP. Etiology of hepatocellular carcinoma: special focus on fatty liver disease. *Frontiers in Oncology*. 2020 Nov 30;10:601710.
- Fernandes GD, Campos D, Ballalai A, Palhares R, da Silva MR, Palhares DM, Neto BH, Barros FM, Gil RD, Chagas A, Carrilho FJ. Epidemiological and clinical patterns of newly diagnosed hepatocellular carcinoma in Brazil: the need for liver disease screening programs based on real-world data. *Journal of Gastrointestinal Cancer*. 2021 Sep;52(3):952-8.
- Lafaro KJ, Demirjian AN, Pawlik TM. Epidemiology of hepatocellular carcinoma. *Surg Oncol Clin N Am*. 2015;24(1):1–17.
- Grandhi MS, Kim AK, Ronnekleiv-Kelly SM, Kamel IR, Ghasebeh MA, Pawlik TM. Hepatocellular carcinoma: from diagnosis to treatment. *Surgical oncology*. 2016 Jun 1;25(2):74-85.
- Khurshid H, Malik IA. Hepatocellular carcinoma: clinical features, evaluation and treatment. *JPMA*. 1995 May 1;45:136-42.
- Hafeez Bhatti AB, Dar FS, Waheed A, Shafique K, Sultan F, Shah NH. Hepatocellular carcinoma in Pakistan: national trends and global perspective. *Gastroenterology Research and Practice*. 2016 Feb 3;2016.

- 9 Badar F, Mahmood S. Hospital-based cancer profile at the Shaukat Khanum memorial cancer hospital and research centre, Lahore, Pakistan. *J Coll Physicians Surg Pak*. 2015;1;25(4):259-63.
- 10 Ha J, Chaudhri A, Avirineni A, Pan JJ. Burden of hepatocellular carcinoma among hispanics in South Texas: a systematic review. *Biomarker Research*. 2017 Dec;5(1):1-6.
- 11 Khalid J, Umar M, Ur-Rehman T, Ali M, Khan GM. Tumor aggression among hepatitis-C related hepatocellular carcinoma patients: an observational study regarding the impact of anti-HCV therapy. *Infectious agents and cancer*. 2020 Dec;15(1):1-3.
- 12 Ventura Y, Carr BI, Kori I, Guerra V, Shibolet O. Analysis of aggressiveness factors in hepatocellular carcinoma patients undergoing transarterial chemoembolization. *World J Gastroenterol*. 2018;24(15):1641.
- 13 Jafri W, Jafri N, Yakoob J, Islam M, Tirmizi SF, Jafar T, Akhtar S, Hamid S, Shah HA, Nizami SQ. Hepatitis B and C: prevalence and risk factors associated with seropositivity among children in Karachi, Pakistan. *BMC infectious diseases*. 2006 Dec;6(1):1-0.
- 14 Haque S, Jalil S, Riaz S. Gender Disparity of Hepatocellular Carcinoma and Metastatic Adenocarcinoma; A Survey Report. *Proceedings SZPGMI Vol*. 2019;33(1):48-52.
- 15 Goh GB, Chang PE, Tan CK. Changing epidemiology of hepatocellular carcinoma in Asia. *Best practice & research Clinical gastroenterology*. 2015 Dec 1;29(6):919-28.
- 16 Zheng B, Zhu Y-J, Wang H-Y, Chen L. Gender disparity in hepatocellular carcinoma (HCC): multiple underlying mechanisms. *Sci China Life Sci*. 2017;60:575-584
- 17 Munaf A, Memon MS, Kumar P, Ahmed S, Kumar MB. Comparison of viral hepatitis-associated hepatocellular carcinoma due to HBV and HCV-cohort from liver clinics in Pakistan. *Asian Pacific Journal of Cancer Prevention*. 2014;15(18):7563-7.
- 18 Russo FP, Zanetto A, Pinto E, Battistella S, Penzo B, Burra P, Farinati F. Hepatocellular carcinoma in chronic viral hepatitis: where do we stand?. *International Journal of Molecular Sciences*. 2022 Jan 2;23(1):500.
- 19 Usman HR, Akhtar S, Rahbar MH, Hamid S, Moattar T, Luby SP. Injections in health care settings: a risk factor for acute hepatitis B virus infection in Karachi, Pakistan. *Epidemiology & Infection*. 2003 Apr;130(2):293-300.
- 20 Yang B, Liu JB, So SK, Han SS, Wang SS, Hertz A, Shariff-Marco S, Lin Gomez S, Rosenberg PS, Nguyen MH, Hsing AW. Disparities in hepatocellular carcinoma incidence by race/ethnicity and geographic area in California: Implications for prevention. *Cancer*. 2018 Sep 1;124(17):3551-9.