Hepatitis: The Most Prevalent Liver Disorder In The Lower Socioeconomic Areas Of Karachi, Pakistan

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ABSTRACT: Liver diseases are becoming a burden on the world day by day, with viral hepatitis being on top of the list and hepatocellular carcinoma is the 2nd leading cause of cancer deaths. The prime aim of the study was to observe most prevalent Liver disorder in the patients of lower socioeconomic areas. A total of 111 patients were observed in the major government hospitals for various liver disorders. Details of their laboratory parameters including Liver function tests, Hematological factors and ultrasound were collected. Among the 111 patients were categorized based on socioeconomic status, it was found that 82% patients belonged to lower class. For justification, various modifiable risk factors were also observed in these patients including smoking habits, tobacco eating, alcohol consumption, habit of self-medication. From the data collected, it was found that 91.9% patients were diagnosed with Hepatitis, 2.7% patients were diagnosed for Hepatocellular Carcinoma, 1.8% patients were enrolled with hepatomegaly, 1.8% patients were suffering from liver failure while fatty liver and gallstones were the least found liver disorders with only 0.9%. When the patients with hepatitis were categorized, 94.1% were found to be diagnosed with Hepatitis C and rest with Hepatitis B. Hepatitis C was found to be the most prevalent liver disorder in the lower socioeconomic areas of Karachi. Various risk factors were involved in its prevalence Further research, awareness and vaccination programs related to the risk factors and the treatment of Hepatitis are needed to control this life-threatening disease in these areas.

Index Terms: Liver, Hepatitis, Social class, Infection, inflammation, Viral

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1 INTRODUCTION

LIVER is largest and complex organ, occupying 2.5% of body weight. It performs versatile functions in human body essential for maintaining homeostasis [1]. More than 30 years of major development in treatment and management of Liver diseases, millions of people still suffering from acute and chronic Liver diseases globally. Diverse etiological factors of Liver illnesses contribute to about fourth to fifth leading cause of Death whereas, common cause of Liver diseases is Non-Alcoholic Liver disease, Hepatitis B virus, Hepatitis C virus and alcohol Abuse [2,3]. Liver inflammation 'Hepatitis' is caused by infectious and non-infectious agents. The virus that are responsible for Hepatitis are Hepatitis A virus (HAV), Hepatitis B virus (HBV), Hepatitis C virus (HCV), Hepatitis D virus (HDV) and Hepatitis E virus (HEV) [4]. Viral hepatitis can be asymptomatic and may lead to Hepatic Failure [5]. As reported by World Health Organization, viral hepatitis alone caused 1.34million deaths in 2015 while 720,000 people died of cirrhosis and 470,000 of hepatocellular carcinoma (HCC) worldwide. Pakistan ranks 2nd in the world regarding the prevalence of hepatitis with more than 13million people suffering from viral hepatitis [6]. HCV related HCC has become a great burden making HCC 5th common cancer in men and 7th common cancer in women [7]. Multiple factors are responsible for the occurrence of these diseases including socioeconomic status, lifestyle, diet, medication and Secondary diseases. Socioeconomic disparities are associated with inequality in Health and mortality rate as appears in data reported by some countries [8]. There is different socio-economic Life style related diseases [9]. It has been suggested higher socioeconomic class adopt a healthier life style [10]. The goal of current study is to observe various Liver diseases among patients of low socio-economic class and to determine most prevalent Liver disease.

2 METHADOLOGY

2.1 Study Population

The study was conducted in Karachi, Pakistan. The survey is based on randomly selected population of low socio-economic areas. The data is collected from different Government hospitals, Jinnah Post Graduate Medical Center (JPMC), Abbasi Shaheed Hospital, Sindh Government Qatar Hospital and Civil Hospital. The study is based on 111 respondents with age group above 15 years and include both Male and Females.

2.2 Data Collection

Data was collected through a structured questionnaire filled by interviews from the patients where possible or from their attendants. The questionnaire was comprised of questions regarding all the basic information of the patients including demographic and socioeconomic attributes that is gender, age, occupation, marital status, locality. A history of previous diseases and the vaccination status of patients was also determined. Various risk factors such as self-medication, tobacco or alcohol use and consumption of energy drinks were also added in the questionnaire.

2.3 Laboratory tests and Reports

Complete blood picture that is cell count, hemoglobin, hematocrit, mean corpuscular volume (MCV), mean corpuscular hemoglobin (MCH) and platelet count was recorded from patients' blood test reports. Liver function test (LFT) reports were also examined for the determination of levels of Aspartate Transaminase (AST), Alanine transaminase (ALT), Gamma Glutamyl Transferase (GGT), Direct Bilirubin, Indirect Bilirubin and total Bilirubin. Hemostatic factors like Prothrombin time (PT), activated partial Thromboplastin time (APTT) and INR were noted to determine the Hemostatic status of the patients. Results from ultrasonography and biopsy were also recorded to determine hepatocellular carcinoma (HCC), Hepatomegaly and Cirrhosis. Presence of edema and Ascites was based

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on the visual examination of patient and the history of weight fluctuation.

2.4 Statistical Analysis
The data was entered and analyzed using SPSS version 16.0. Variables were expressed in percentages while the variables for laboratory parameters were expressed as mean & standard deviation.

2.5 Ethical Issues
Interviews and blood test reports were obtained from patients after a written informed consent was signed. This project was conducted under ethical guidelines of Pakistan.

3 RESULTS
The data of (n=11) patients collected from different government hospitals, out of 111 patients, 52.25% patients were male whereas, 47.75% patients were female. Various risk factors and Status of vaccination was assessed from data. It shows 54.1% patients were vaccinated with hepatitis B virus vaccine, 51.4% with Hepatitis A virus vaccine and 48.6% with Pneumonia Vaccine (Figure 1). Moreover, the data shows self-medication as a major risk factor with 80.1% patients reported it while other includes, consanguinity (27%), alcohol (9%), blood transfusions (2.7%), tobacco (0%) (Figure 2). Data of laboratory parameters and tests of patients was collected that was already recorded by Hospitals. It shows levels of Alanine Amino Transferase is slightly higher in 15-45 year of age group, levels of aspartate Amino Transferase is under normal range, Total bilirubin levels is increased in age group 36-55 years and Alkaline phosphatase levels is increased in all age groups (Table 1). The reports represent complete Blood picture which shows normal RBC, WBC count, hemoglobin levels and Platelets (Table 2). Socio-economic class was asked from patients and it reveals that most of them belong to Lower Socioeconomic class (Figure 3). Additionally, prevalence of Liver disorders in socio-economic class is evaluated. The data shows Hepatitis B, Hepatitis C, Hepatocellular Carcinoma, cholelithiasis and Liver failure is commonly found in patients whereas, Hepatitis C is most prevalent Liver disease in Lower socio-economic division (Figure 4).
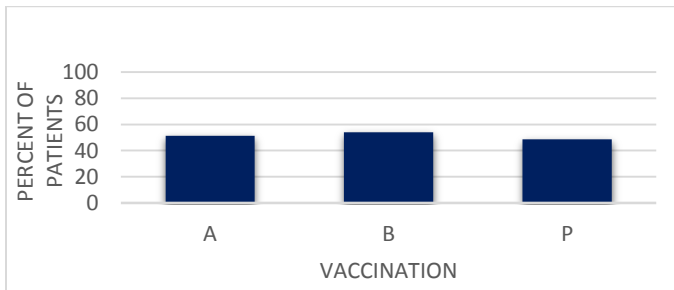
Figure 1: Status of Hepatitis A, Hepatitis B and Pneumonia vaccination in Patients.
A (Hepatitis A vaccine), B (Hepatitis B vaccine), P (pneumonia vaccine)
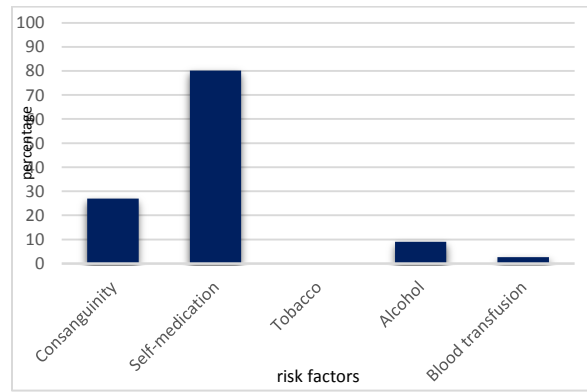
Figure 2: Common risk factors of Liver diseases as reported by Patients.

**Table 1**: Liver Function test reports of patients.

LIVER FUNCTION TESTS				
AGE GROUPS	ALT	AST	BILIRUBIN	ALP
15-25	64.1±40.5	25.4±11.7	0.9±0.2	154.9±84.3
26-35	61.0±44.3	22.0±6.02	0.7±0.4	175.2±57
36-45	57.1±29.3	30.0±2.8	5.0±10.0	165.5±64.5
46-55	51.0±32.0	42.8±52.4	1.3±0.9	190.9±107.9
56-65	52.5±27.1	45.0	0.9±0.3	138.4±107.2
>65	39.0	34.0±5.7	0.90	380.0

Values are represented as mean ± S.E.M.
ALT (Alanine Amino Transferase), AST (Aspartate Amino Transferase), ALP (Alkaline Phosphatase)

Table 2: Hematological tests reports of patients.

HEMATOLOGICAL TESTS				
AGE GROUPS	Hb	RBC	WBC	PLATELETS
15-25	12.5 ±1.9	4.9±0.7	15.7±27.2	205.6±69.5
26-35	11±2.3	4.3±1.0	6.4±1.7	195.0±87.0
36-45	10.5±2	4.5±0.7	13.1±20.7	251.8±55.8
46-55	10.5±1.5	4.5±1.0	7.1±5.1	149.6±83.2
56-65	10.6±1.7	4.6±0.7	6.9±1.2	174.7±71.6
>65	13.3±1.7	5.3	5.1	98

Values are represented as mean ± S.E.M.
Hb (Hemoglobin), RBC (red blood cells), WBC (white blood cells).
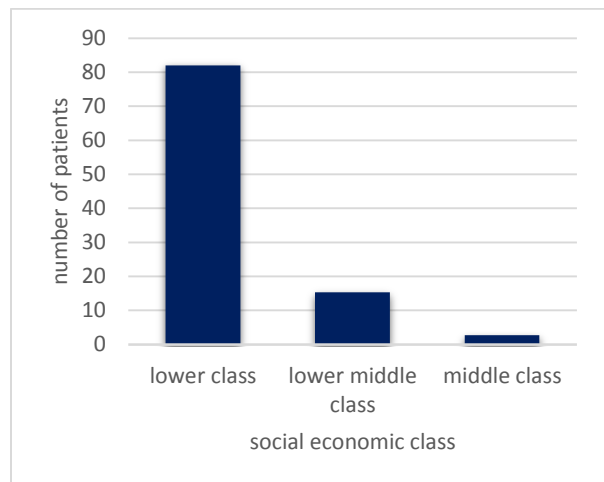
Figure 3: Socio-economic class of patients.
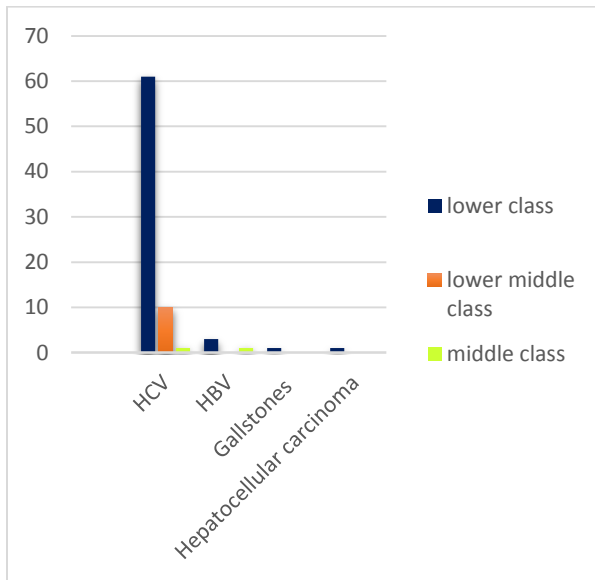
Figure 4: *Socio-economic status and Prevalence of Liver disease in patients HBV (Hepatitis B), HCV (Hepatitis C).*

4 DISCUSSION:

Hepatitis can be acute icteric illness that can be noticed by change in transaminase levels. Hepatitis B and C virus can persist as chronic infections [11]. It has been reported 130-180 million suffer from chronic Hepatitis C virus (HCV) infection. This infection can cause mild symptoms to serious illness consequently leads to Liver Cirrhosis and Liver Failure. Low and middle income countries face various health issue and HCV is most commonly found in developing countries additionally, limited resources are available for the treatment and diagnosis of HCV infected patients [12]. Thirty-one countries account for HCV infection out of which >50% cases are found in China, Egypt, India, Russia, Nigeria and Pakistan [13]. The present study reveals that most people are vaccinated with HBV and HAV. It has been known HAV is vaccine preventable disease whereas, HBV vaccines are easily available but still HBV is a global endemic disease due to improper vaccine schedule, poor public health and increasing population [14]. The current data on risk factors of Liver diseases shows more than 80% population practice self-medication. A Survey on Taiwanese adolescents shows that most of them use self-medication without reading the appropriate dosages on labels and illiterate about pharmacy [15]. A study suggested more than 50% people in developing countries, India, Nepal, Bangladesh and Pakistan are practicing self-medication without doctor's advice [16]. Liver is easily exposed to drug toxicity as it eliminates toxins and drugs. Alteration in Liver enzymes is a key measure to evaluate Liver diseases [17]. Moreover, blood tests and Liver function tests report were collected from patients which depicts elevated levels of Alanine aminotransferase and Alkaline phosphatase and total bilirubin as reported by a study which suggest acute icteric hepatitis is related to elevated transaminase levels, alkaline phosphatase and total bilirubin [18]. Some patients display normal levels of ALT in selected population as proposed in a study [19] Accuracy of values of normal ALT levels is still a question [20]. The study illustrates that maximum number of

respondents were associated with lower economic division and infected with HCV, which is most dominant Liver disease among respondents. As reported by another study, Higher the socio-economic grade lower will be the risk for HCV infection [21].

5 CONCLUSION:

In conclusion, despite many advances in HCV treatment, it is still prevalent in poor economic regions. Easy availability of treatment, awareness programs, better hygiene and sanitary conditions can restrict spreading of infections including Hepatitis.

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CONLICT OF INTEREST

Declares none.

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