

DISTRIBUTION AND DETERMINANTS OF ACUTE HEPATITIS IN KARACHI, PAKISTAN: A CROSS-SECTIONAL STUDY.

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ABSTRACT

Introduction: The burden of hepatitis A to E is still very high in Pakistan and currently prevention is the best way to address this issue. Availability of reliable epidemiological data is essential for an effective national response. **Objective:** This study is an effort to find the distribution and determinants of Acute Viral Hepatitis cases in Karachi, Pakistan. **Material and Methods:** This descriptive cross-sectional study was carried out at Civil Hospital Karachi, Sindh, Pakistan. Samples of 312 patients were recruited using random sampling technique, during nine months from Dec 2018 to Oct 2019. Data was collected by trained investigators through a standardized multiple-choice questionnaire with closed and open-ended questions and samples were also collected from suspects for ELISA testing. Data was analyzed using SPSS v.22. **Results:** The results showed that the maximum respondents lied between 25 & 40 years of age. Hepatitis-C was found in 24% of cases, Hepatitis-E in 10.9%, Hepatitis-B in 6.4% and Hepatitis- A in 6.4%. Almost 40% of the suspects shown a combination and highest number of combinations have been shown with Hepatitis-C. Common symptoms included abdominal discomfort, anorexia, feeling of fatigue and malaise. Almost 88% consumed un-boiled and untreated water for drinking. Sixty-one percent of patients used injections and 20.5% received infusions in past 6 months while 59% male patients visited barber shops in the last six months. **Conclusion:** Prevalence of all types of viral hepatitis is high, with HCV being predominantly frequent. Continued transmission of enteric viral hepatitis A and E can be attributed to contaminated drinking water. The risk factors for HBV and HCV include injections and contaminated barber-kits.

Key Words: Acute Viral Hepatitis, Hepatitis case distribution, Determinants of Hepatitis in Pakistan.

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INTRODUCTION

Viral hepatitis is the eighth highest cause of mortality globally. Within the Eastern Mediterranean Region, Egypt and Pakistan bear 80% of the disease burden.¹ There is an excessive disease burden of hepatitis A to E in Pakistan and high morbidity is claimed to be due to hepatitis A and E, while the high mortality is seen in case of hepatitis C and D.¹ Each year brings about 150,000 new cases in Pakistan.¹ Un-boiled water, unsafe or contaminated food, and poor sanitary conditions are recognized as risk factors for hepatitis A virus (HAV) and hepatitis E virus (HEV) infections.² The risk factors for HBV and HCV infections include multiple therapeutic injections and transfusions, previous surgical procedure, reuse or sharing of syringes, dental risk, barber related risks, nose or ear piercings, tattooing, needle-stick injuries in healthcare

providers, and unprotected sexual intercourse.³⁻⁵ According to study conducted by Pakistan Medical Research Council, about 13 million Pakistani were suffering from hepatitis B and C,² which includes 10 million population due to hepatitis C virus infection alone. Additionally, the prevalence of hepatitis in different groups region, and communities is distinctively variable.⁶ Pakistan is still a developing country with limited resources, and has substantial population density. So currently prevention is the best way to address this issue because cost of managing hepatitis and associated complications is huge. The Key challenge for an effective national response includes availability of reliable data.⁷ Our study is an effort to find the current case distribution of viral hepatitis and its determinants in a metropolitan city of Pakistan.

MATERIAL & METHODS

This Cross-sectional study was conducted during 1stDec 2018 to 31stOct 2019 in Civil Hospital Karachi (CHK), Sindh, Pakistan. The sample size of 312 was calculated through WHO calculator by using the proportion of 52% with 95% C.I, 5% margin of error and 10% non-response rate. Ethical approval was obtained from Institutional Review Board of Baqai Medical University’s Institute of Health Sciences and Informed consent was obtained. Participation was totally discretionary and no coercion was involved during process of data collection. Participants were offered information and treatment. Arrangement of costly medicines from community social services were also offered.

Acute hepatitis refers to a broad variety of conditions leading to acute inflammation caused by one of the five hepatitis viruses, which results in elevation of liver biochemical lab tests. It is proclaimed as acute infection, if it subsides in less than six months but if abnormal findings last greater than six months, then it is known as chronic hepatitis.^{8,9}

Hepatitis suspects were discerned by trained investigators through assessment of clinical

symptoms and standardized multiple-choice questionnaire (with closed and open-ended questions). The Suspects then evaluated for serum hepatic enzymes and LFTs. Finally, 312 suspects with strong clinical evidence and having elevated serum hepatic enzymes and deranged LFTs underwent ELIZA test. Two-eighty-three suspects were found to be positive for acute hepatitis. The data was analyzed by Statistical Package of Social Sciences version 22. Descriptive and inferential statistics were generated.

RESULTS

A total of 283 (out of 312 suspects) laboratory confirmed acute viral hepatitis patients were identified while remaining 29 suspects did not turn out to be positive for any of the tests done (A to E) for hepatitis and were labeled as ‘Not a case’, as per classification of CDC protocol of Acute Hepatitis cases. The mean age of the respondents is 33.3 years, whereas, the median and mode appear at 30.5 and 30 years respectively. The close approximation of all the three measures of central tendencies indicates a normal distribution, or Gaussian pattern. (Figure 1).

Figure: 1: Age Distribution

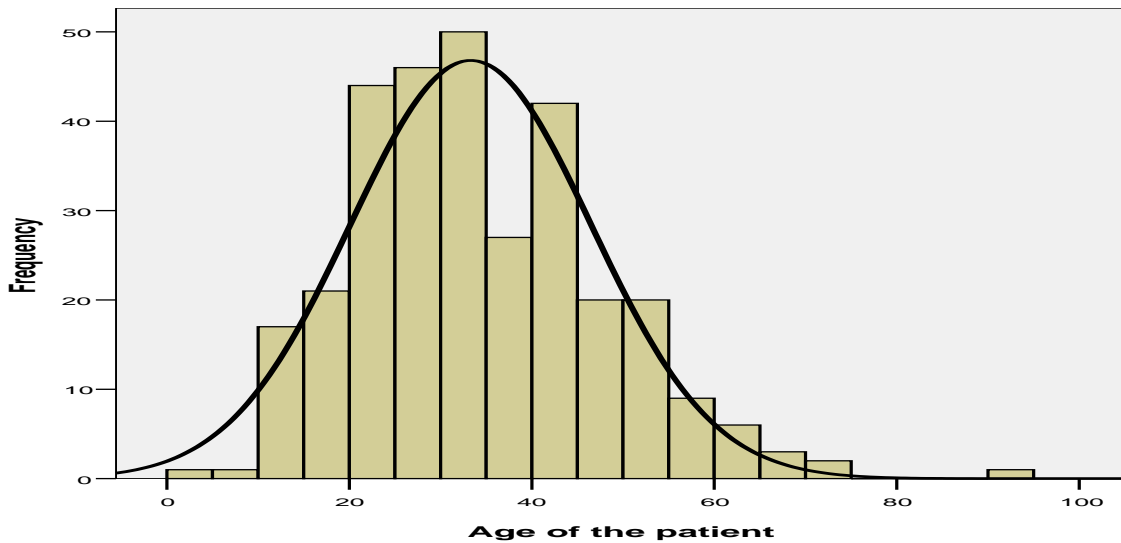


Table: 1 – Presence of signs & symptoms

Response	Jaundice	Abdominal discomfort	Anorexia	Dark Urine	Feeling of Fatigue	Presence of Fever	Malaise	Vomiting
Frequency (Percentage)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Yes	66(21.2)	240(76.9)	132(42.3)	119(38.1)	241(77.2)	110(35.3)	128(41.0)	47(15.1)
No	246(78.8)	72(23.1)	180(57.7)	193(61.9)	71(22.8)	202(64.7)	184(59.0)	265(84.9)
Total	312(100.0)	312(100.0)	312(100.0)	312(100.0)	312(100.0)	312(100.0)	312(100.0)	312(100.0)

Table: 2 – Case Distribution				
Case		Frequency	Percent	Cumulative Percent
	A	20	6.4	6.4
	B	20	6.4	12.8
	C	75	24.0	36.9
	E	34	10.9	47.8
	AB	6	1.9	49.7
	ABC	19	6.1	55.8
	ABCD	1	.3	56.1
	ABD	2	.6	56.7
	ABDE	3	1.0	57.7
	ABE	1	.3	58.0
	AC	34	10.9	68.9
	ACE	3	1.0	69.9
	AE	10	3.2	73.1
	AEC	1	.3	73.4
	BC	23	7.4	80.8
	BCD	2	.6	81.4
	BCDE	1	.3	81.7
	BCE	5	1.6	83.3
	BD	4	1.3	84.6
	BE	4	1.3	85.9
	CE	15	4.8	90.7
	Not a case	29	9.3	100.0
	Total	312	100.0	

Table: 3 – Case Distribution of Hepatitis-C cases		
Case	Frequency	Percentage
C	75	24
ABC	19	6.1
ABCD	1	0.3
AC	34	10.9
ACE	3	1
AEC	1	0.3
BC	23	7.4
BCD	2	0.6
BCDE	1	0.3
BCE	5	1.6
CE	15	4.8
	183	57

Table 2 displays case distribution (alone and in combination) in a descending and alphabetically arranged fashion. We can see here that almost 47.8% of all the suspects have only one type of hepatitis, among which Hepatitis-C and Hepatitis-E are noticeable.

Almost 40% of the suspects have shown a combination and the total of different combinations of Hepatitis have come out to be 17 in number. The highest number of combinations has been shown with Hepatitis-C (57%), and this makes Hepatitis-C alone to be the leading type of Hepatitis, whether alone, or in combination. It is noted that most of Hepatitis-B combinations have occurred with Hepatitis-C. (Table 3).

Almost all participants (97.8%) had drinking water from water supply of municipality. Only 7 (2.2%) of the respondents were using well water, and out of which, 1.6% drank water treated before use. Some used the process of decantation and sedimentation, whereas others used Alum and/or some local chemicals.

Approximately Thirteen Percent (12.5%) used boiled water for daily drinking purpose. Almost Sixty two Percent (61.5%) of patients received injections and 20.5% received infusions in past six months.

Fifty-Nine Percent of the males visited barbers and one Percent females visited beauty-parlors in last six months of their life.

DISCUSSION

The present study is carried out to find the case distribution and determinants of acute viral hepatitis in Karachi.

The findings of our study indicate that mean age of the respondents is 33.3 years which means highest prevalence of HCV infection is seen at the adults' age group. Since, most prevalent type of hepatitis in our sample is hepatitis C, so this finding is consistent with previous research studies¹⁰ Same is true for hepatitis B and E which can occur at any age.^{11,12} Acute hepatitis A infection among aged >30 years is unusual but agrees with findings of a contemporary systematic review, which showed that hepatitis A endemicity has decreased in the South Asia region including Pakistan.¹³

The most common presentations shown by a research¹⁴ study includes jaundice (55%), dark urine with or without pale stools (35%) and nausea and/or vomiting (35%). Jaundice was most common in patients with HAV, HBV and HCV (83%, 73% and 77%, respectively) but was seen in only 40% of HEV patients.¹⁴ Contrary to this, our data shows the most frequent presentation is abdominal discomfort 76.9% (240 out of 312). Anorexia is found in 42.3% and dark urine in 38% of patients. Jaundice, on the other hand, is reported in 21.2% of the cases. An important finding here is the difference of

values showing jaundice is not seen in all individuals with acute viral hepatitis. Similarly, dark urine may not necessarily be due to raised bilirubin alone, it might be owing to different factors, as for instance dehydration. So, prevalent complain in acute patients comes out to be abdominal discomfort and anorexia.

Our findings revealed that there is a continued transmission of enteric viral hepatitis A and E in Sindh, which is attributed to lack of proper sanitation.^{12,13} Although acute hepatitis A is a self-limited and asymptomatic mild disease in children but it can lead to severe symptoms in adults.¹³

People are encouraged to boil drinking water before utilization to reduce contamination. However, the practical situation is quite opposite, as majority of infected patients reported drinking unboiled water.

Consistent with previous studies¹⁵⁻¹⁷ our data shows high injection (61.5%) and infusion (21.5%) practices which may contribute to transmission of HBV and HCV in Sindh. Use of four to eight injections per person per year in Pakistan is estimated which is among highest rates in the world.¹⁸ The high demand of injections is driven by the well liked but fallacious belief that oral medications are less effective as compared to injectables.¹⁹ Addressing precarious practice of injections is indispensable to limit the epidemic of HCV infection in our country.

Our study reveals that fifty-nine percent of the male patients had history of visiting barbers in last six months of their life, which signifies high probability of unsterilized barber-shop kits' involvement in spreading hepatitis among these patients. Pakistani barbers use traditional straight razor at their salons, which is also known as 'cut-throat razor' or 'open razor'.²⁰ These razors are unsterilized and re-used most of the time^{20,21,22}. This is significantly attributed to unawareness of barbers about route of transmission of this infectious disease.^{21,22}

CONCLUSION

Our study affirms that viral hepatitis remains a major public health threat in Pakistan and Hepatitis C virus infection is the commonest type of acute hepatitis, whether alone or in combination. The data support the obligation to educate general public and our health-care providers about the risks for HBV and HCV transmission through unnecessary injection practices along with other risky behaviors and improving clean drinking water access to control further transmission of hepatitis A and hepatitis E in Pakistan.

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