

# Prevalence of Hepatitis B and Hepatitis C in Patient with Maintenance of Hemodialysis in Sindh

Prevalence of Hep. B & C in Patient with Hemodialysis

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## ABSTRACT

**Objective:** To determine the prevalence of HBV and HCV infections in hemodialysis patients living in the province of Sindh.

**Study Design:** Observational study

**Place and Duration of Study:** This study was conducted at the multiple district level centers hospital Karachi from January 2017 to December 2018.

**Materials and Methods:** 251 patients with hemodialysis were enrolled to study. Patients who were on maintenance haemodialysis treatment for more than 6 months, 3 times a week, for 4 hours per session, with the dialysis dose being mediated by ionic conductivity  $Kt/V > 1.5$ , and with an age between 18-80 years were included in study.

**Results:** Out of 251 patients, 52.6% were male and 47.4% were female. The mean age of patient was  $51.47 \pm 12.81$  years. Mean hemodialysis duration was  $6.51 \pm 6.96$  years. 13.1% were presented with upper GI bleeding, 10.4% with hepatic encephalopathy, 7.2% with malena and 15.5% with ascites. We found 12.4% patients with hepatitis B and 22.3% with hepatitis C. significant association of hepatitis B and hepatitis C with age group and gender.

**Conclusion:** This study has shown that the patients on maintenance hemodialysis have a high prevalence of HCV and HBV infection and a due to exposure of several different risk factors such as improper handling of the needles, careless behaviour towards the importance of vaccination against the virus and using multiple centres for dialysis at a time.

**Key Words:** Hemodialysis, Hepatitis C virus, Hepatitis B virus

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## INTRODUCTION

The prevalence of hepatitis B (HBV) and hepatitis C (HCV) has been rising among the residents of Sindh, Pakistan. "The World Health Organization has estimated that the HBV and HCV have become a global health issue which affects approximately 2 billion people across the globe<sup>1</sup>. It is also estimated that the 3% of the total world population are living with hepatitis B and hepatitis C and approximately 350,000 individuals die due to HBV and HCV worldwide<sup>2</sup>. Due to the high

rate of HBV and HCV infections, Pakistan is one of major worst afflicted countries. Pakistan has divided into four provinces, including Sindh, Punjab, Balochistan, and Khyber Pakhtoon Khawah (KPK)<sup>3</sup>. The condition of hemodialysis has been found one of the major risk factors in the prevalence of hepatitis B and hepatitis C."

Hemodialysis is an artificial way of maintaining hemostasis in the body in patients with sudden onset acute renal failure and in those who developed severely impaired renal functions and became end stage<sup>4</sup>. "It has been found that most of the patients who are experiencing dialysis for a long period of time and has high vulnerability to several different complications. One of the major adverse effect is the spreading of infection with hepatitis B and hepatitis C. Several different studies have been conducted across the globe regarding the risk factors and incidence of HBV and HCV infections and their response to treatment among the hemodialysis patient<sup>5</sup>. A prospective cross-section study at the dialysis unit of Sindh Institute of Urology in Pakistan showed that 124 patient out of 1220 patients were hepatitis positive while going through hemodialysis. It shows that the prevalence rate of hepatitis B was 10.2%<sup>6</sup>. On the other hand, a cross-sectional descriptive study at Kenya was conducted at Kenyatta national hospital and revealed that among 100

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patients who were undergoing through dialysis, hepatitis B was found in 8 patients and hepatitis C was found in 5 patients<sup>7</sup>. In Arab countries, the prevalence of hepatitis B and hepatitis C was 71% in Kuwait, 23.7% in Sudan, 83% in Egypt and 41% in Tunisia<sup>8</sup>. Despite of increasing prevalence of hepatitis B and C in Pakistan, the reduction of incidence rate of hepatitis B and C among hemodialysis patient has been neglected as not much recent data or literature is available concerning to the management of risk factors of hepatitis B and C among hemodialysis patient. Thus, the purpose of the study was to determine the prevalence of hepatitis B and hepatitis C among hemodialysis patient in” Sindh.

**MATERIALS AND METHODS**

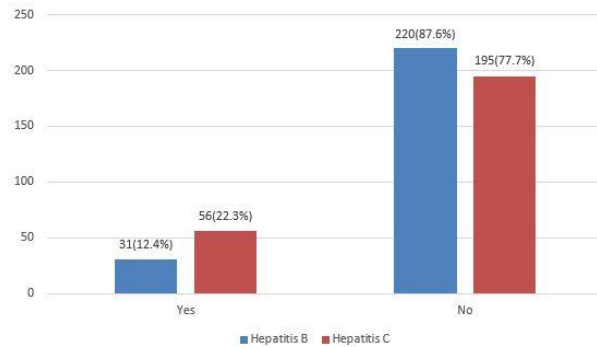
This is an observational study of 251 patients of either gender with age above 18 years with who have undergone hemodialysis at multiple district level centers hospital Karachi. This study was conducted from January 2017 to December 2018. Patient demographics and clinical history was taken by the principal investigator. Patients who were on maintenance haemodialysis treatment i.e. for more than 6 months, 3 times a week, for the duration of 4 hours per session, with the dialysis dose being mediated by ionic conductivity Kt/V>1.5, and with an age between 18-80 years were included in study. All patients were dialysed with highly permeable biocompatible membranes. Patients with age less than 18 years and with congenital coagulation disorder were excluded. Laboratory investigations have been done for the confirmation of hepatitis B and hepatitis C viral infection.

**RESULTS**

**Table No.1: Demographic Variables. N=251**

Variable	No. of Patients	Percentage
<b>Gender</b>		
• Male	132	52.6%
• Female	119	47.4%
Age ( Means)	51.47±12.81 years	
<b>Upper GI bleeding</b>		
• Yes	33	13.11%
• No	218	86.90%
<b>Hepatic Encephalopathy</b>		
• Yes	26	10.40%
• No	255	89.60%
<b>Malena</b>		
• Yes	18	7.20%
• No	233	92.80%
<b>Ascites</b>		
• Yes	39	15.5%
• No	212	84.50%

Out of 251 patients 132(52.6%) were male and 119(47.4%) were female. The mean age of patient were 51.47±12.81 years. Mean duration of hemodialysis was 6.51±6.96 years. 33(13.1%) were presented with upper GI bleeding, 26(10.4%) with hepatic encephalopathy, 18(7.2%) with malena and 39(15.5%) with ascites in Table-1. We found 31(12.4%) patients with hepatitis B and 56(22.3%) with hepatitis C as presented in Chart 1.



**Chart No.1: Prevalence of Hepatitis B and Hepatitis C**

**DISCUSSION**

The prevalence of HBV and HCV infection among hemodialysis patients in Sindh has been reported. 31 patients have been found to be associated with hepatitis B, while 56 patients were found to be associated with hepatitis C. “The results of the study showed that there is a significant association between HBV and HCV infections with the gender and age group. The results of the study showed that the prevalence of HBV and HCV is high among male hemodialysis patients comparatively to female gender in our study. At recent, the use of intravenous injections is the main mode of transmission of HBV and HCV in developing countries<sup>9</sup>. Several previous studies have concluded that the prevalence of hepatitis B and hepatitis C is associated with the risk factors such as sharing of single-use vials for blood transfusion, improper disinfection of dialysis machines and handling between the patients, improper sterile technique<sup>10</sup>. All of these risk factors have found to be associated with the increased prevalence of hepatitis B and hepatitis C among hemodialysis patients. In Bangladesh, approximately 14% of patients undergoing hemodialysis were serologically positive for hepatitis B and C infections shown in the report of 2010<sup>11</sup>. In the present study, a similar prevalence of hepatitis B and hepatitis C infections among dialysis patients have been seen. The results of the study revealed that one-fourth of hemodialysis patients were associated with the infections of hepatitis B and hepatitis C. The patients were also not vaccinated against hepatitis B virus and thus identified as one of the most important factor for the spread of this infection among hemodialysis patients. A similar study has found that HBV and HCV infections can be prevented through active immunity<sup>12</sup>.

This study found that the incidence rate of HBV and HCV infections can further be reduced through vaccinating the hemodialysis patients.

Prevalence of hepatitis B and hepatitis C virus among hemodialysis patients in different countries have been reported as UK 10.22%, Netherlands 3%, Japan 44.0%, USA 30.0%, Egypt 80.0%, and Taiwan 60.0%<sup>13</sup>. In this study, the prevalence rate of HBV and HCV has been evidenced by the positivity of anti-HCV, similar to the present study. The results of the present study also revealed that the hepatic encephalopathy is also a major complication that has been found to be associated with the increased prevalence of these viral infections. Hepatic encephalopathy is a spectrum of neuropsychiatric abnormalities found in patients with dysfunction of liver<sup>14</sup>. In addition, *Bacillus thuringiensis* has also been found as one of the major risk factors associated with HBV and HCV infection among hemodialysis patients<sup>15</sup>. It is associated with the duration on hemodialysis and units of blood” transfused.

Studies have also shown that the number of years on hemodialysis is also a major risk for the higher rates of HBV and HCV infections<sup>16, 17</sup>. The present study found similar results and indicated that the prevalence of HBV and HCV infections increases from 15% to 40% after 5 years on hemodialysis.

In the present study, it has also been shown that the positivity of hepatitis B virus and hepatitis C “virus was more in patients who are on hemodialysis over a longer period of time . Furthermore, the registry report from seven Asian countries revealed prevalence of hepatitis B virus and hepatitis C virus ranged from 1.3% to 14.6%<sup>18</sup>. The prevalence of HBV an HCV in the same region ranged from 0.7% to 18.1%. In these countries, the frequency or prevalence of HBV and HCV has been found significantly higher in hemodialysis patients as compared to PD patients. However, in New Zealand and Australia, the prevalence of HBV and HCV has showed reducing tendency. The findings of the study also revealed that the similar risk factors of hepatitis B and hepatitis C have also been identified in the hemodialysis patients<sup>19</sup>. It has been identified that the infection caused by hepatitis B and hepatitis C viruses is common among hemodialysis patients. These viral infections have also found to be to impact adversely on the prognosis of hemodialysis dependent patients. The use of disinfectant dialysis machines”, proper technique in handling the patients may help in reducing the prevalence of hepatitis B and C virus infections among them.<sup>20, 21</sup>.

## CONCLUSION

Conclusively, this study has shown that the prevalence of hepatitis B and C has now become significant in the province of Sindh. It has also been identified that the hepatitis B and hepatitis C is associated with the risk

factors such as recurrent blood transfusions for the correction of low haemoglobin levels , improper disinfection of dialysis equipments and their handling between the patients, use of poor sterile technique in needling the patients and the lack of vaccination against the virus needs attention for the reduction in its prevalence among hemodialysis patients and also its complications that results in putting the extra burden on their health and also effects their quality of life.

### Author’s Contribution:

Concept & Design of Study: Lubna Ghazi  
 Drafting: Kulsoom Mansoor, Anita Haroon  
 Data Analysis: Zurqa Khalid, Fareha Kashan Theba, Madeeha Zafar  
 Revisiting Critically: Lubna Ghazi, Kulsoom Mansoor  
 Final Approval of version: Lubna Ghazi

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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