

## Impact of Covid-19 on Patients Undergoing Maintenance Hemodialysis : A study from Central India

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### ABSTRACT

**Introduction :** We tried to assess the impact of COVID 19 on the life of ESRD patients undergoing maintenance hemodialysis.

**Materials & Methods :** A written questionnaire consisting of 26 questions (24 closed ended & 2 open ended) was handed over to the patients. The questionnaire consisted of questions analyzing the knowledge of patients about COVID 19 infection & the difficulties faced by them due to ongoing COVID 19 pandemic.

**Results :** 107 submitted the completed questionnaire. Sixty five were males (60.7%). Mean age was  $56.71 \pm 12.24$  years. Seventy four (69.2%) were undergoing twice weekly hemodialysis. Sixty percent patient had diabetes whereas 82% were hypertensive. Median distance between patient's house & dialysis unit was 5 KM. Sixty eight percent of the patients were unaware that coronavirus can survive on plastic surface for more than 24 hours. Thirty one percent respondents faced one or more difficulties in commuting for hemodialysis. Thirty two percent patients were thinking to reduce the frequency of hemodialysis due the fear & difficulties faced during COVID 19 pandemic.

**Conclusions :** It is important to assess the impact of COVID 19 on the life of hemodialysis patients so that necessary actions can be taken to address the concerns.

**Key-words :** COVID 19, Hemodialysis patients, ESRD, Impact

### Introduction :

End stage renal disease (ESRD) patients are at high risk for developing severe COVID 19 infection owing to multiple associated comorbidities & frequent visit to healthcare facility for undergoing hemodialysis.<sup>1</sup> Till a vaccine is discovered, prevention remains the best remedy to fight COVID 19 pandemic. Many countries including India have implemented strict lockdown measures to prevent spread of coronavirus in the society. While kidney patients are being encouraged to stay home and avoid crowds as much as possible during the outbreak, those treated with in-center hemodialysis

must continue their scheduled hemodialysis sessions, which are prescribed two to three times a week. We did this study to assess the knowledge of COVID 19 among patients undergoing hemodialysis. We also tried to assess the difficulties faced by these patients due to measures taken to spread of infection like lockdown.

### Materials & Methods :

We enrolled 110 ESRD patients undergoing maintenance hemodialysis in 3 different hemodialysis units in Nagpur, India. After obtaining written consent for participation, a questionnaire consisting of 26 questions (24 closed ended & 2 open ended) was handed over to the patients. Survey questionnaire, before being administered, was validated properly. Pilot testing was performed on 10 patients who did not participate in development of survey. The questionnaire consisted of questions analyzing the knowledge of patients about COVID 19 infection, their reaction in case of possible outbreak of COVID 19 infection in the dialysis unit & the difficulties faced by them due to ongoing

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COVID 19 pandemic. Responses obtained were analyzed with the help of SPSS software version 17.

### **Results :**

Out of 110 patients, 107 submitted the completed questionnaire. Sixty five were males (60.7%). Mean age was  $56.71 \pm 12.24$  years. Seventy four (69.2%) were undergoing twice weekly hemodialysis. Sixty percent patient had diabetes whereas 82% were hypertensive. Thirty eight percent patients were holding a bachelor's degree, 13.1% had a Master's degree, 29% had completed high school education & rest of the respondents had completed primary school education.

### **Mode of transport to dialysis unit :**

Sixty seven (62.6%) patient were travelling to dialysis unit by a 4 wheeler, 27.1% used a two wheeler, 7.5% used a cab & only 2.8% of the respondents were using public transport for commuting to dialysis unit. Median distance between patient's house & dialysis unit was 5 KM (Range 1-200 km).

### **Availability of single room at house with attached lavatory :**

Eighty two patients (76.6%) had a single room with attached toilet at their place of stay. Mean number of family members staying with the patient were  $4.56 \pm 2.36$  (range 1-13 members).

### **Face mask :**

Ninety six percent (103) patients were wearing mask while commuting to & from dialysis unit. Fifty five percent patients were using a surgical mask & remaining were using a home made mask for personal protection. Seventy six percent patients were afraid of contracting COVID 19 infection if fellow patient/ dialysis staff was not wearing a face mask.

### **Hand hygiene :**

Ninety eight percent of the respondents said they were washing hands for minimum 20 seconds. For hand hygiene, 23.4% were using soap & water, 15.9% were using alcohol based hand rub & 60.7% were using both the methods of hand hygiene.

### **Survival of virus :**

Sixty eight percent of the patients were unaware that coronavirus can survive on plastic surface for more than 24 hours. Fourteen (13.1%) patients were carrying plastic carry bags to the hemodialysis unit. Out of the 67 patients who were using AV fistula belts, 79 % patients were disinfecting the belt prior to application.

### **Transmission & symptoms of COVID 19 infection :**

Sixty seven percent of the patients were aware of all the modes of transmission of COVID 19 infection. 78.5% patients were aware that cough, fever & myalgia are the main symptoms of COVID 19 infection.

### **Difficulties faced due to lockdown :**

Thirty one percent respondents faced one or more difficulties in commuting for hemodialysis. Frequent need to take permission from Government authorities (73.3% of respondents) was the most common problem faced by the patients. Ninety five percent of the patients said they did not face any isolation from the neighbors/society members because of their frequent visit to the healthcare facility.

### **Management of dialysis shifts :**

All the respondents said they would inform the dialysis staff in advance if they experience symptoms suspicious of coronavirus infection at home (cough, fever, sore throat). Eighty four percent patients agreed to undergo hemodialysis in the last shift of the day if they experience symptoms suspicious of COVID 19 infection. Thirty two percent patients were thinking to reduce the frequency of hemodialysis due the fear & difficulties faced during COVID 19 pandemic.

### **Response of patients in case of COVID 19 outbreak in the dialysis unit :**

One hundred (93.5%) were willing to undergo testing for COVID 19 infection in case of COVID outbreak in the dialysis unit. In case of COVID outbreak in the dialysis unit, 95% patients were willing to continue hemodialysis in the same facility

after proper sanitization and were willing to undergo hemodialysis under the same hemodialysis technician if he/she tested negative for COVID 19 infection. Patients were given a scenario: there was COVID 19 outbreak in another hemodialysis unit. Patients undergoing hemodialysis in that unit were tested for COVID 19 infection. Those patients who were negative for infection were shifted to our dialysis unit. In this scenario, 35% of the patients were afraid of contracting coronavirus infection from such migrated patient.

#### **Preparedness of hemodialysis unit :**

Ninety four percent patients felt that their respective dialysis units were taking adequate precautions to prevent spread of COVID 19 infection in the unit.

#### **Discussion :**

COVID 19 was declared a pandemic by WHO on 11th March 2020.<sup>2</sup> It has rapidly infected millions of people across the globe. Dialysis patients could be particularly hard hit by COVID-19 because of the high prevalence of underlying comorbidities. When most of the citizens are being advised to stay indoors, patient undergoing maintenance hemodialysis have to visit their respective hemodialysis unit 2-3 times every week. This puts them at an increased risk of contracting coronavirus infection. Preventing spread of infection remains the mainstay of containing this pandemic till definitive therapy & vaccine are available. Being aware of the characteristics of COVID 19 disease can help ESRD patients in restricting the incidence & spread of infection in the dialysis dependant patients. We did this study with the aim of studying the awareness of COVID 19 infection among hemodialysis patients & to know the difficulties they were facing during ongoing lockdown imposed in the country. We also tried to assess their response in case of COVID outbreak in the dialysis facility.

In our study, 60% patients had underlying diabetes mellitus & 82% had hypertension, indicating high prevalence of comorbidities. During lockdown, 90% of the patients had to use their personal vehicles to commute to the hemodialysis facility. Median distance they had to travel was 5 kilometers (range

1-200 km). Absence of public transport can put additional financial burden on these patients by increasing the spending on arranging conveyance for frequent visits to the hemodialysis facility.

Crowding at residential place can increase the risk of transmission of COVID 19 infection if someone in family member is infected. In our study, mean number of family members staying with these patients were  $4.56 \pm 2.36$ . In case of patient developing symptoms suspicious of COVID 19 infection, he/she may be asked to be under home quarantine. In our study, approximately 1 in 4 patient did not have a single separate room with attached toilet at their residence. In case, any such patient becomes symptomatic it may be difficult to put them under home quarantine without putting the family members at risk.

Using face mask may reduce the spread of respiratory droplets.<sup>3</sup> In our study, most of the patients (96%) were using face masks while commuting to & from the hemodialysis units. Fifty five percent of interviewed patients were using a surgical mask while 45% were using a homemade mask. Ninety eight percent of the respondents were washing hands for minimum 20 seconds at home. Diligent use of face mask & hand hygiene measures is the effect of efforts taken by government authorities, print & electronic media, healthcare facilities to raise awareness of disease spread in general public.

Coronavirus can survive on plastic & steel surface for up to 3 days. These can act as fomites for spread of infection. Sixty percent of the respondents were unaware about prolonged survival of coronavirus on plastic surface & 13% were carrying plastic bags to the dialysis facility. One third of the respondents were unaware of all the modes of transmission of COVID 19 infection & 20% were unaware of common symptoms of COVID 19 infection.

We need to educate patients about the modes of transmission of infection & role of fomites in transmission. Patient should be encouraged to avoid bringing unnecessary valuables to the unit & to disinfect personal belongings before leaving the

dialysis facility. They should also be made aware of the common symptoms of COVID infection, so they could identify the symptoms at home and report early to health authorities.

Indian society of Nephrology guideline working group have recommended to dialyze the patients suspected for COVID 19 infection in the last shift of the day if isolation room facility is not available with the unit.<sup>4</sup> In our patient population, all the patients were willing to inform the dialysis unit in advance if they developed symptoms like fever, cough at home. Majority of the patients (84%) were willing to undergo hemodialysis in last shift of the day on developing symptoms suspicious of COVID 19 infection.

In case of COVID outbreak in the dialysis unit, all the patients may have to undergo screening for COVID 19. In our study, majority of the respondents (93.5%) were willing to undergo diagnostic testing for COVID 19 infection in case of outbreak. Ninety five percent of the respondents in our study were willing to continue hemodialysis in the same unit after proper sanitization & similar proportion of patients were willing to undergo hemodialysis under same dialysis technician provided he/she tests negative for presence of infection.

Ninety four percent of the patients felt the hemodialysis facility was taking adequate precautions to curtail spread of COVID 19 transmission in the dialysis facility. One in three patients were thinking to reduce the frequency of hemodialysis. It is necessary to build confidence in patients about the precautions being taken by dialysis facility to prevent spread of infection so that they do not decrease dialysis frequency to the extent of getting uremic. Reducing frequency of dialysis may put these patients at increased risk of complications & hospitalization.

Thirty one percent respondents in our study faced one or more difficulties in commuting for hemodialysis. Frequent need of permission from Government authorities (73.3% of respondents) was the most common problem faced by the patients. There is need of proper interdisciplinary

communication so that law enforcing authorities facilitates maintenance hemodialysis for ESRD patients. Dialysis facilities should issue a certificate to every patient stating the frequency of dialysis & their place of stay which can be verified by the police to allow commute of such patients.

Majority of the respondents did not face any discrimination from neighbors / society members because of their frequent visit to the healthcare facility. Social distancing norms should be reinforced. In these calamitous times, hemodialysis patients may feel loneliness & suffer from depression. Support from hospital staff, doctors & society may help to reduce or prevent mental illness.

#### **Conclusions :**

The authors conclude there was significant knowledge gap about COVID 19 among ESRD patients. Due to fear of contacting COVID 19, almost one third patients were thinking of reducing the frequency of hemodialysis which may be detrimental especially in patients with no residual urine output. Such concerns should be addressed on urgent basis with percolation of adequate knowledge about the preventive strategies regarding COVID 19.

#### **Conflicts of interest :**

The authors declare that there is no conflict of interest regarding the publication of this paper.

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