Data from a Large Hemodialysis Center form an Industrial City: Demographics, Etiology and Hepatitis Status.

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ABSTRACT
Chronic kidney disease posts a huge burden on health care cost and its associated morbidity and mortality. Knowledge of the disease burden is only possible by documentation of patient data. We here present our data for our dialysis patients from one of the largest industrial city Faisalabad, Pakistan. It is interesting to note that almost half of our patients were hepatitis C virus positive. We are hopeful that such data will be useful for the policy makers and health care providers to plan for future health care needs of maintenance hemodialysis patients.

Key words: Hemodialysis, HCV, HBsag, Chronic kidney disease.
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Introduction:

In a Chronic Kidney Disease (CKD), there is irreversible gradual loss of renal function over the period of months to years, ultimately requiring renal replacement therapy in the form of dialysis (Hemodialysis or Peritoneal dialysis) or renal transplant[1]. CKD is associated with increased risk of hospital admissions, mortality and morbidity worldwide due to cardiovascular events[2]. End stage renal disease (ESRD) has a major health impact worldwide. In the USA, at the end of 2012, there were 449,342 patients undergoing treatment for ESRD[3].

The mortality among dialysis patients is 6.1 - 7.8 times higher than that for individuals in the general age-matched population[3]. In the Saudi Arabia the incidence and prevalence of ESRD have increased in the last three decades probably due to factors such as increase in life expectancy, rapid changes in lifestyle, urbanization and high population growth[4]. Till 2010, 284 patients per million population (pmp) were undergoing dialysis worldwide, which was a 1.7 times increase from 165 pmp patients in 1990, it shows a 170% increase in population undergoing maintenance dialysis[5].This study was performed to analyze various demographic data such as age, duration of

dialysis, cause of end stage renal disease and hepatitis B and C status of 197 patients undergoing hemodialysis in our center.

Subjects and Methods:

This study was conducted in DHQ hospital Faisalabad, Pakistan, after informed consent from all the participants. In this retrospective study, we analyzed the clinical data in 197 patients of ESRD, who were undergoing HD during the period of 06 months from 1st January 2019 to 30th june 2019. Medical records were the major source of information on the patients. We retrieved the demographic data such as age, duration dialysis, cause of ESRD, Hepatitis B and C status.

Statistical Analysis:

Variables were reported as mean, range and standard deviation. Analysis was conducted by using SPSS 21 and Microsoft Excel. Figures and tables were use to describe all variables.

Results:

In this study, total numbers of patients undergoing hemodialysis were 197, vintage of hemodialysis was missing in one patient. Age of all patients ranged from 12 years to 76 years. Mean age with standard deviation was 45.82 ± 14.57 as shown in table 1. Mean duration of dialysis was 29.08 ± 22.25 months, minimum duration was of 15 days and maximum was 132 months.

Table 1: Age and vintage of hemodialysis among 197 maintenance hemodialysis patients from a large center.

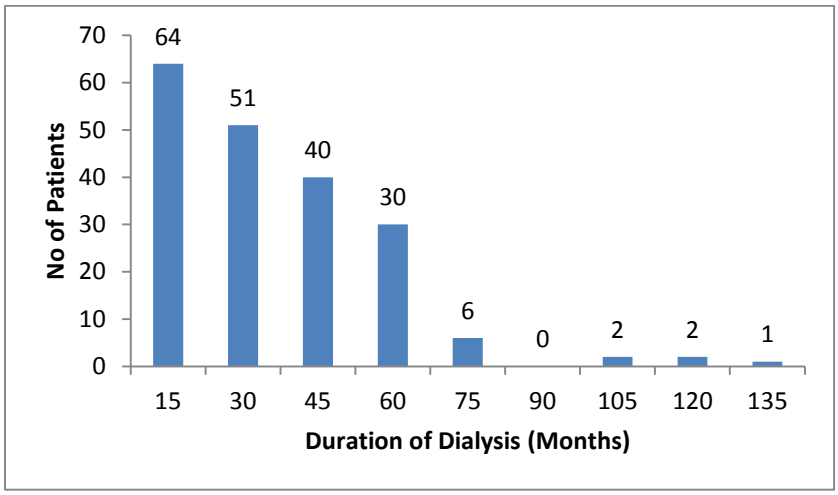
	Age (Years)	Duration of dialysis (Months)
Mean	45.82 ±14.57	29.08±22.25
Range	12-26 years.	0.5- 132
Total	197	196

Almost 40% of the patients were undoing hemodialysis for the last >30 months and only one patient out of 196 patients had the duration of dialysis exceeding 130 months, as shown in table 2 and figure1.

Table 2: Frequency distribution according to age among 197 maintenance hemodialysis patients from a large center.

Duration of Dialysis (Months)	*No of Patients (n=196)*	*%Age*
0 - 15	64	32.70%
16 - 30	51	26.00%
31 - 45	40	20.40%
46 - 60	30	15.30%
61 - 75	6	3.10%
76 - 90	0	0.00%
91 - 105	2	1.00%
106 - 120	2	1.00%
121 - 135	1	0.50%

Figure 1: Graphic presentation of duration of hemodialysis in months among 197 maintenance hemodialysis patients from a large center in Faisalabad, Pakistan.



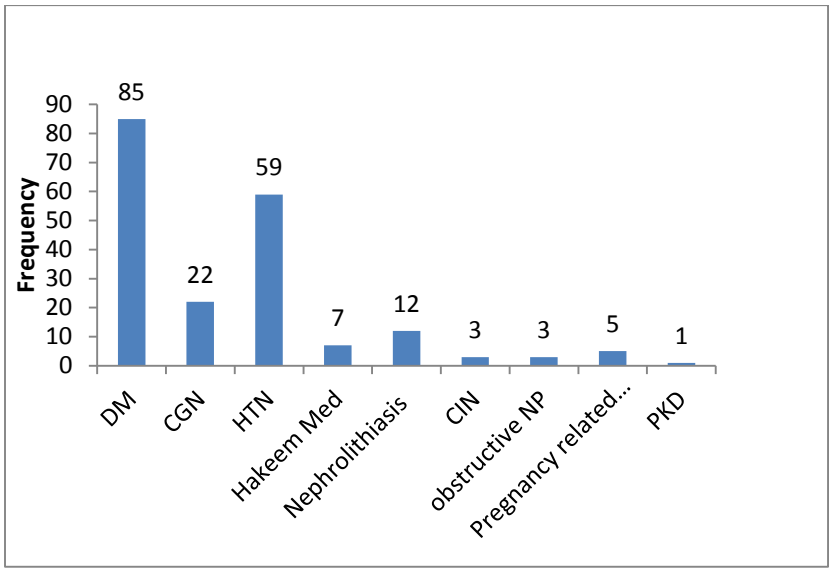
It is clear that the most common cause of ESRD was diabetes mellitus,43.10% (n=85) from our dialysis facility, while the second most common cause was hypertension (n=59, 29.9%). Only 2.5% patients had pregnancy related kidney disease and 1 patient had polycystic kidney disease, Table 3 and Figure 2.

Table 3: Etiology of underlying cause of end stage renal disease among 197 maintenance hemodialysis patients from a large center from Faisalabad.

Cause of ESRD	***Frequency (n=197)***	**%Age**
Diabetes Mellitus	85	43.10%
Chronic Glomerulonephritis	22	11.20%
Hypertension	59	29.90%
Hakeem Medication	7	3.60%
Nephrolithiasis	12	6.10%
Chronic Interstitial Nephritis	3	1.50%
obstructive Nephropathy	3	1.50%
Pregnancy related CKD	5	2.50%
Polycystic kidney disease	1	0.50%

Amongst all the study population, 40.6% (n=80) of patients were HCV positive and 9.6% patients were HBV positive. Majority of the patients 49.7% (n=98) were hepatitis B and C negative, Table 4 and Figure 3.

Figure 2: Graphic presentation of etiology of underlying cause of end stage renal disease among 197 maintenance hemodialysis patients from a large center from Faisalabad.



Discussion:

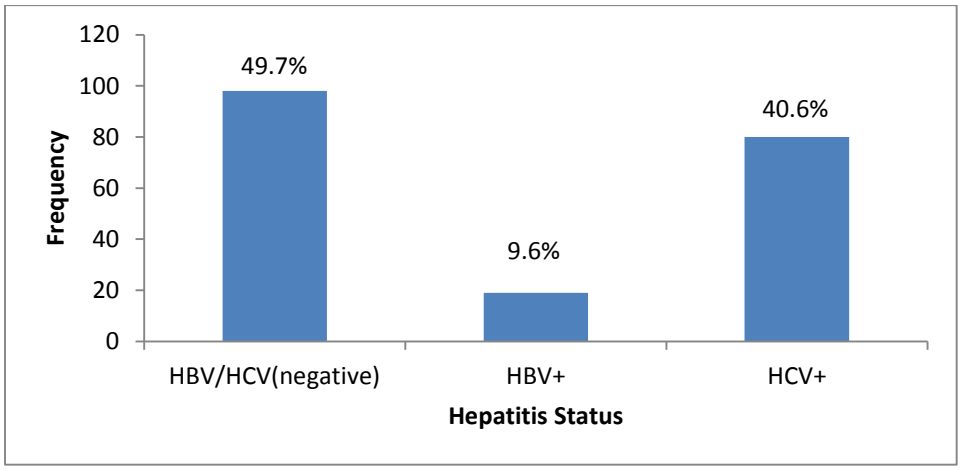
The incidence of end stage renal disease requiring renal replacement therapy is growing slowly worldwide and has a significant impact on healthcare cost, even in developed countries[6]. In our study the mean age of patients on dialysis was 45.8 years which is less as compared to other developed countries in the world. One of the studies in Egypt showed mean age of 53.1 years[7], which implies that ESRD increases with age, it shows improvement and better healthcare than our system. We are far away from developed countries as in USA mean age was 59.2[8], in Europe it was 60.3[9] and in Japan mean age of entire dialysis population was 66.9 years[10].

Table 4: Hepatitis B and C status among 197 maintenance hemodialysis patients from a large center from Faisalabad.

B/C Status	***Frequency (n=197)***	**%age**
HBV-/HCV-	98	49.7%
HBV+	19	9.6%
HCV+	80	40.6%

In our study most of the patients 32.7% had duration of dialysis less than 15 months, the prevalence of dialysis population varied worldwide. United States Renal Data System (USRDS) revealed that ESRD prevalence in 2013 for Taiwan, Japan, and the USA was 3138, 2411, and 2043 pmp, respectively, whereas the lowest prevalence was reported in Indonesia, Bangladesh, South Africa, the Philippines, Russia, and Saudi Arabia, where ESKD prevalence ranged from 66 to 486 pmp[8].

Figure 3: Graphic presentation of Hepatitis B and C status among 197 maintenance hemodialysis patients from a large center from Faisalabad.



In our study the data regarding cause of ESRD was comparable to international data. The most common cause of ESRD in our dialysis population was diabetic nephropathy (DN) 43.1%. Worldwide diabetes mellitus accounts for 50% of cases of ESRD[11]. In the USA during 2005–2008, 6.9 million patients had DN[12], while many Arabic countries such as Libya, Kuwait and Lebanon also had diabetic nephropathy most common cause of ESRD[13]. In Saudi Arabia, at the end of 2014, DN affected 41.7% of all ESRD cases[14]. In contrary to this few countries such as Egypt and Yemen have DN as least encountered cause of ESRD[15]. Hypertension was the second most common cause of ESRD in our patients, occurring in 29.9% of patients. Hypertension is highly prevalent in Saudi Arabia, affecting more than 25% of the adult population[16]. Hypertension is also a major cause of ESRD in other regional countries such as Egypt[17], Iran[18] and Turkey[19]. Hypertension was the cause of ESRD in 28% of ESRD cases in the US[20].

Third most common cause of ESRD in our dialysis unit was chronic glomerulonephritis (11.2%), which was a bit high as compared to data of other countries. In Sudan, GN was the reported cause of ESRD in 5.5% of the patients[21] and 3% in the US[20]. The prevalence of HCV and HBV was 40.6% and 9.6% respectively. The worldwide prevalence of HCV infection among HD patients varies widely, with estimates ranging from 5% to 60% depending on geographic location[22]. It was estimated that the prevalence of HCV infection in HD patients was 54.4% in Syria[23], 21% in Jordan[24], 7.7% in France[25], 6.25% in Italy[26], 5.8% in Germany[27], 43% in Kosovo[28], and 1% in Brazil[29]. Data of HBV positive patients from our center was comparable to the data of two other centers from Pakistan, prevalence of HBV in dialysis patients of SIUT Karachi was 10.2% and 12.4% from one dialysis center in Islamabad[30]. According to dialysis registry of Pakistan 2010, only 34.46% (51 out of 148) dialysis units in Pakistan provide dialysis facilities to HBsAg positive patients[31].

Our study has few limitations as data presented here was collected from only one HD unit and does not represent the whole city population, moreover the data contained the recorded information of the patients. Early diagnosis and prompt treatment can lead to better prognosis and survival. We feel that our results can provide a foundation for future researchers to conduct further studies.

Conclusion:

Hence our study concluded that most of the patients in our hemodialysis center were young as compared to the international population with high prevalence of hepatitis C infection. Most common cause of ESRD came out to be the diabetes mellitus, which was also comparable with international data.

Conflict of Interest: None

Acknowledgement:

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