Original Article

Socioeconomic Status of Patients with End Stage Renal Disease and the Microeconomic Impact of Hemodialysis

Amer Azhar, Mufti Baleegh-ur-Raheem Mahmood, Ahmad Zeb Khan and Tariq Ikram

ABSTRACT

Objective: The aim of this study is to exactly know the socioeconomic status and the microeconomic impact of End Stage Renal Disease in our Hemodialysis dependent patients.

Study Design: Descriptive / cross-sectional study.

Place and Duration of Study: This study was conducted at the Department of Nephrology, Khyber Teaching Hospital Peshawar, Pakistan from July 2015 to January 2016.

Materials and Methods: Data concerning the study questions pertaining to the socioeconomic status of hemodialysis patients and the microeconomic impact of hemodialysis dependency was collected on a proforma asking questions about the impact of hemodialysis dependency. Socioeconomic status of patients was assessed using the modified Kuppuswami socioeconomic scale.

Results: A total of 177 ESRD patients on maintenance Hemodialysis were studied, of which 111 (62.7%) patients were male (mean age 43.1 years, SD ±14.8, Range 18-70 years), while the remaining 66 were females (mean age 42.3 years, SD ±15.2, Range 18-80 years)(M:F=1.4:1). Despite Hemodialysis being free of cost, 47.4% patients were spending more than PKR 5000 per month as additional health related cost. Around 93.2% patients were currently unemployed as opposed to 43.5% before hemodialysis. Renal transplantation was not performed in majority (84.7%) patients due to the lack of affordability. Majority of our patients (84.8% males and 74.7% females) belonged to lower middle and upper lower socioeconomic classes.

Conclusion: Thus we conclude that hemodialysis dependency incurs a significant economic cost on our patients. The rate of unemployment is very high in our patients. Most of our patients belong to the lower socioeconomic groups. Other modalities of renal replacement therapy that keep the patients socioeconomically viable such as CAPD and transplantation should be utilized and subsidized instead of hemodialysis alone.

Key Words: End Stage Renal Disease (ESRD), Chronic Kidney Disease (CKD), Hemodialysis, Economic impact, Socioeconomic status.

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INTRODUCTION

Symptoms and complications related to End Stage Renal Disease (ESRD) severely compromise the physical and mental functionality of the patients.[1] This loss of functional capacity severely affects the ability of the patient to perform his living and occupational activities.

Renal Replacement Therapy (RRT) is offered to such patients to maintain their quality of life and functional status as near to normal as possible, so as to preserve their productivity.

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Hemodialysis (HD), the commonest modality of renal replacement therapy,[2] binds the patients to remain attached to hemodialysis machine for about 12 hours in a week, more commonly during the working hours of the day. This affects employability of the patients in addition to the already compromised functional status.[3] The unemployment rate among hemodialysis patients is reported to be around 75%.[4] Multiple studies have reported the adverse effects of unemployment, lower income and lower socioeconomic status of patients on their Quality of life (QOL), death rate, loss to follow up, malnutrition, hemoglobin levels and rate of renal transplantation.[5,6]

The average age of newly diagnosed ESRD patients in the developing world is reported to be around 40 years, as opposed to the average age of around 60 years in the developed world.[7] Thus the disease affects people at the prime of their age. A commentary on the burden of ESRD in India and Pakistan reported that, around 70% patients stopped RRT within the first 3 months due to lack of affordability. Off the patients who underwent Hemodialysis only 40% received regular Hemodialysis[8]

MATERIALS AND METHODS

This was a descriptive cross-sectional study, conducted at Department of Nephrology, Khyber Teaching Hospital Peshawar. Data was collected over a period of 06 months (July 2015 to January 2016) after the approval of synopsis. The Sample size was taken to be a minimum of 177, keeping 50% proportion of frequency of Hemodialysis dependent patients (empirical value), with 95% confidence interval and 5% margin of error. The population size was taken as 325, which is approximately the total number of hemodialysis patients in this hemodialysis center. Consecutive, non-probability sampling technique was utilized. All patients above the age of 18 years and both genders, being managed on maintenance Hemodialysis at this center were included in this study. Maintenance hemodialysis was defined as hemodialysis dependency for at least three months.

Approval was obtained from the hospital research and ethical committee. Informed consent was obtained from all patients after counseling. All patients were asked to fill a proforma and were assisted by a research assistant in this regard. The study proforma asked questions to assess the microeconomic impact of hemodialysis dependency on the individual patient and their families. The study proforma also contained the Kuppuswamy socioeconomic status assessment tool[9,10] modified to the most recent all-India consumer price index for industrial workers (CPI-IW=266. September 2015),[11] with currency conversion to Pakistani rupee at the exchange rate of 1.58 (December 6th, 2015).[12] The Socioeconomic status of patients was categorized according to the Kuppuswamy Socioeconomic status scale as:-

Total score	Socioeconomic Class
26-29	Upper
16-25	Upper middle
11-15	Lower middle
5-10	Upper lower
< 5	Lower

RESULTS

A total of 177 ESRD patients on maintenance Hemodialysis were studied, of which 111 (62.7%) patients were male (M:F=1.4:1). The mean age for male patients was 43.1 years (SD ±14.8, Range 18-70 years), while the mean age for females was 42.3 years (SD ±15.2, Range 18-80 years). The impact of transportation for dialysis was assessed as" cost of travelling" and "transportation time" for a single dialysis session. Figure 1.

The health related cost of hemodialysis dependency was assessed as monthly medical expenditure. Figure 2. This data pertains to the two largest government facilities where hemodialysis, Erythropoietin and Iron supplements are provided free of cost to the patients. Therefore at the time of acquisition of this data, patients were not exposed to these costs. However patients were still paying for medications and laboratory workup for other co-morbidities.

The employment status of our patients before and after hemodialysis dependency is depicted in figure 3.

None of the patients were receiving any financial assistance from any source apart from the free Hemodialysis facility. None of the patients had any health insurance policy which could assist them in bearing the financial cost of their disease.

All the patients were well informed of renal transplantation as a superior alternative to hemodialysis. The major reason for the patients not doing renal transplantation was reported by the patients as lack of affordability (84.7%), followed by non-availability of a kidney donor (8.5%), transplantation not offered by the physician (5.6%) and lack of medical fitness for transplantation (1.10%). None of the patients knew about CAPD as an alternate strategy of renal replacement therapy.

The socioeconomic status of the patients was assessed as described in methodology and is shown in figure 4.

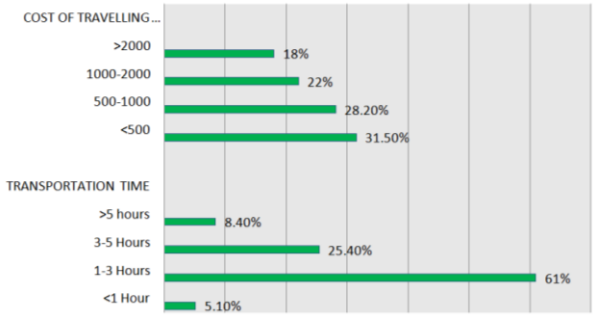

Figure No.1: Transportation

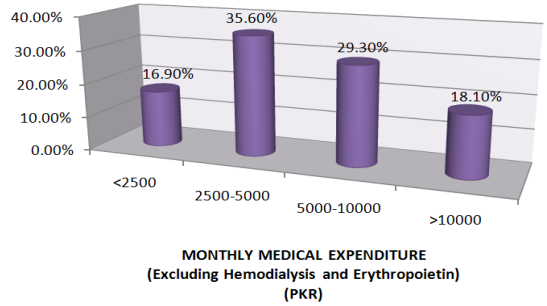

Figure No.2: Medical cost

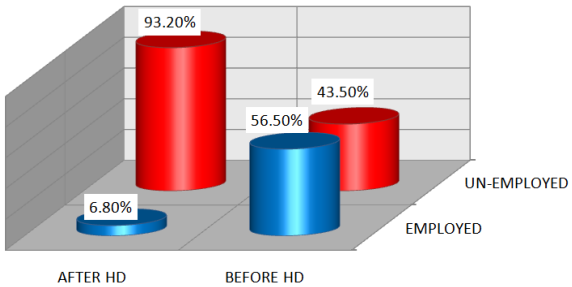

Figure No.3: Relationship of employment status of dialysis dependency.

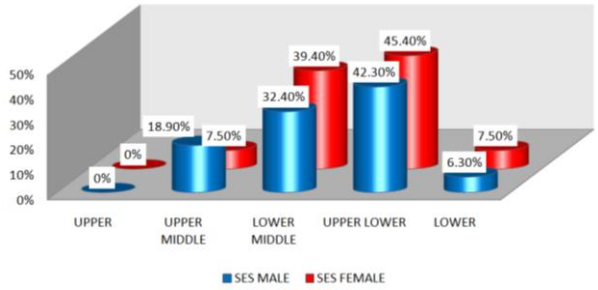

Figure No.4: Socioeconomic status.

DISCUSSION

In our study the mean age for male and female patients was 43.1 years and 42.3 years respectively. Other regional studies have reported similar mean age.[13,14] This age is significantly younger than that reported for western populations' i.e. 60.2 years for Europe and 60.5 years for USA.[15] Thus our patients are landing into Dialysis dependency at a much younger age as compared to the patients from more developed countries.

Our patients had a longer travel time and higher cost of travel for dialysis. Around 61% patients required a travel time of 1-3 hours while 25.4% patients required 3-5 hours of travelling time on the day of hemodialysis. Longer travelling time has been associated with greater mortality and lower quality of life in dialysis dependent patients.[16] The UK Renal association guidelines recommend that the travel time to dialysis facility should be under 30 minutes.[17] Around half of the patients (50.2%) were spending from PKR 500-2000 per session and 18% were spending even more than that in order to travel to and from dialysis center. Jeloka estimated the average monthly travel cost of ESRD patients in India to be 1654 ± 1085 INR (Indian rupees) per month.[18] By todays exchange rate it converts to PKR 2577±1691 per month. Thus in our patients, transportation incurs a major financial burden on the patients.

Average cost of a single hemodialysis session was reported to be 4500 Indian rupees in 2012. This included direct cost (medical and non-medical) which was around 75% of the total cost and Indirect cost due to missed working hours and loss of job and income. If hemodialysis was done at the recommended frequency of three sessions a week, a minimum total sum of 13500 Indian Rupees per week (about 54000 Indian Rupees per month) was required.[19] By todays exchange rate[12] this makes up to 7110 Pakistani rupees per session, 21330 per week, and 85320 rupees per month. Our data pertains to the two largest government facilities where hemodialysis and erythropoietin is provided free of cost to the patients. However patients were still paying for medications for other co-morbidities. Around half (47.4%) patients were spending more than PKR 5000 per month as additional health related cost. For our patients this cost is significant and our patients mostly, are unable to afford proper medical care even when hemodialysis is subsidized by the government.

Around 87% of patients were unemployed at the time of the study and additional 6.2% were retired from their service. Thus a total of 93.2% patients were unemployed. Only the remaining 6.8% of the total were currently employed after starting hemodialysis. Other studies from Pakistan have yielded similar unemployment rates.[20,21] The unemployment rates in hemodialysis dependent patients reported from different regions of the world range from 71.1% to 88.5%.[22,23] This loss of employment adversely affects Quality of life of ESRD patients,[24] and is also associated with psychiatric diseases.[22] Only Around 43.5% of the patients were un-employed before the initiation of hemodialysis. Thus there was a significant increase in the unemployment rate after starting HD.

There is no insurance policy for our patients and for our patients the loss of earnings is not being compensated by any source. Mere subsidization of dialysis does not solve this problem and other therapies which allow a greater functional independence can help solve these issues. Patients with renal transplant have the highest employment percentages, followed by CAPD and lastly Hemodialysis.[25] In a study from Japan, 36% of Hemodialysis patients lost their employment as compared to only 10% CAPD patients.[26] Thus short of renal transplantation, CAPD could prove to be a viable option for our patients.

Renal transplantation and CAPD have the potential to allow the patient to continue his life activities as normally as possible. All of our patients recognized renal transplantation as an alternative to hemodialysis. Around 84.7% patients stated lack of affordability as a reason for not having kidney transplant. For 8.5% patients a kidney donor was not available. Thus only 6.7% of our patients are truly not suitable for transplantation and if efforts are made around 90% patients could possibly become renal transplant recipients successfully. When asked about CAPD, None of the patients knew about this modality suggesting that CAPD was not discussed with the patients. This confirms the general practice in our society, of nephrologists not offering CAPD to the patients. The institution of CAPD and further strengthening of renal transplantation can significantly contribute towards the socio-economic independence of our patients.

A great majority of patients, (84.8% males and 74.7% females) were in Lower Middle and Upper Lower Classes. This reflects the fact that government hospitals are primarily serving the poor masses**.** The socioeconomic class of ESRD patients significantly affects the disease and its outcome. Lower SES classes are more prone to progress to ESRD secondary to any cause while this trend progressively decreases for

higher SES classes.[27] Lower SES patients are also found to have more advanced disease at initial encounter.[28] Patients from higher SES classes have a better survival as compared to the lower groups.[29] Thus lower socioeconomic status could be an important factor affecting the already poor morbidity and mortality figures of our patients.

CONCLUSION

Thus we conclude that hemodialysis dependency incurs a significant economic cost on our patients and their families. Patients have to bear considerable cost even if hemodialysis itself is subsidized. The rate of unemployment is very high in our patients. Most of our patients belong to the lower socioeconomic group, which further aggravates the brunt of a resource draining disease.Measures to improve socioeconomic state and viability of hemodialysis patients need to be inculcated in any program directed towards management of these patients. Other modalities of RRT that keep the patients socioeconomically viable such as CAPD and transplantation should be utilized and subsidized instead of hemodialysis alone.

Author's Contribution:

Concept & Design of Study:	Amer Azhar
Drafting:	Amer Azhar
Data Analysis:	Mufti Baleegh-ur-Raheem Mahmood, Ahmad Zeb Khan
Revisiting Critically:	Ahmad Zeb Khan, Tariq Ikram
Final Approval of version:	Amer Azhar

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

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