

BARRIERS TO KIDNEY TRANSPLANTATION AMONG PATIENTS ON MAINTENANCE HAEMODIALYSIS AT THE JOS UNIVERSITY TEACHING HOSPITAL, NIGERIA.

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ABSTRACT

INTRODUCTION: Chronic kidney disease (CKD) is a major public health problem. End-stage renal disease (ESRD), represents the final stage of CKD and is best treated by Kidney Transplantation. However Kidney Transplantation in Sub-Saharan Africa is beset by a myriad of problems.

OBJECTIVE(S): To identify the limitations to kidney transplantation as the preferred option for treatment of ESRD among patients on maintenance haemodialysis at a tertiary-care hospital in Nigeria.

MATERIALS AND METHODS: This was a questionnaire based descriptive, cross-sectional hospital-based study carried out in the dialysis unit of the Jos University Teaching Hospital, Jos, Nigeria over a 6 months period, from June to December, 2015

RESULTS: A total of 39 patients were enrolled for the study. The mean age of the patients was 45.7 ± 14.6 years. There were 25 (64.1%) male and 14 (35.9%) female. Financial constraint was the main reason limiting kidney transplantation in 66.7% majority of the patients. Five patients (12.8%) were medically unfit either due to advanced age or presence of comorbidities while 3 (7.7%) patients could not find a compatible donor. Other reasons given for not having had kidney transplant include religious belief, and a previously failed kidney transplant.

CONCLUSION: Whereas awareness of kidney transplantation is high among patients with ESRD on maintenance haemodialysis, financial constraint remains the main hindrance to kidney transplantation among patients with End Stage Renal Disease in our setting.

KEYWORDS: Kidney transplantation; Haemodialysis.

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INTRODUCTION

Worldwide, an estimated 200 million people have chronic kidney disease (CKD) and the burden continues to increase¹. Annually, more than 500,000 individuals develop end-stage renal disease (or CKD stage 5) in Sub-Saharan Africa alone and the majority of these patients suffer premature mortality². Data on CKD for most developing countries are either not available or inaccurate, but it is thought that CKD is more prevalent and virulent in Africa than in the Western countries³. In Nigeria, CKD represents about 8-10% of hospital admission^{2,4} with estimated prevalence of ESRD put at 300-400 per million population⁵.

Poverty related factors such as infectious diseases

continue to play an important role in the development of CKD in low-income countries⁶. Although Africa is experiencing an accelerated incidence of hypertension and type 2 diabetes mellitus, which are the underlying cause of a huge proportion of CKD cases^{7,8}, chronic glomerulonephritis and interstitial nephritis are still among the principal causes of CKD in many countries⁶. CKD imposes disproportionate, incalculable human suffering and a catastrophic economic burden on the African continent in several respects⁹. Less than 2% of the patients with ESRD have access to Renal Replacement Therapy (RRT), making ESRD a death sentence for most patients⁹. As at 2010, the number of ESRD patients on RRT worldwide was estimated at about 4.902 million and about a third of this population reside in developing countries which represents 85% of the world's population¹⁰.

Although kidney transplant is acknowledged as the ultimate treatment for ESRD, dialysis is currently the most commonly used modality of RRT worldwide¹¹.

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The annual cost of dialysis treatment which amounts to \$20,000 to \$30,000 per person per year in Sub-Saharan Africa (SSA) is out of the reach of most patients with ESRD, especially as health insurance in these part of the world is poorly developed. Consequently, less than 5% of the 500,000 new cases of ESRD in SSA gain access to even a limited period of dialysis¹². Kidney transplantation as a therapy for ESRD surpasses dialysis treatment both for the quality and quantity of life that it provides and for its cost effectiveness in the long-term¹³.

The first kidney transplant in Nigeria was performed in 2000 at St. Nicholas Hospital, a private hospital in Lagos. Since then more Nigerian hospitals have transplanted kidneys both in public and private hospitals¹⁴. In Nigeria, like most other low income countries of the world, transplant activities are low and very far from sufficient. Transplant rates in the developing world ranges from 0 to 10 per million population in contrast to rates in the developed world at around 30 to 50 per million population¹⁵. There are major challenges to transplantation programs in developing countries including economic deprivation, lack of public awareness, poor attitude towards organ donation, lack of man power and infrastructure, and no clear national policy statements on organ donation and transplantation^{13,15,16}.

The aim of this study was to identify the limitations to kidney transplantation as the preferred option for treatment of ESRD among patients on maintenance haemodialysis at a tertiary-care hospital in Nigeria.

MATERIALS AND METHODS

This descriptive, cross-sectional hospital-based study was carried out in the dialysis unit of the Jos University Teaching Hospital, Jos, Nigeria over a 6 months period from June, 2015 to December, 2015. Study was approved by the Human Research Ethics Committee. The study population was randomly selected from adult patients with ESRD who were on maintenance haemodialysis at the dialysis unit.

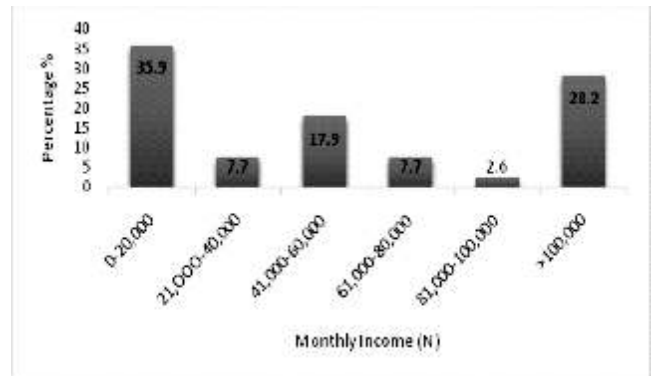
Data were obtained by direct interviewing and entered into a structured questionnaire. Statistical analysis was performed using Statistical Package for Social Sciences (SPSS) version 20. Simple descriptive statistics was used to present data.

RESULTS

A total of 39 patients were enrolled for the study. The mean age of the patients was 45.7 ± 14.6 years while the male to female ratio was 25(64.1%)/14(35.9%). Other socio-demographic characteristic of the study population are as presented in table 1. The median monthly income of the study population was

N45,000.00 (\$229.60), range, N0.00 to N200,000.00 (\$1020.40), however majority of the patients (35.9%) earned less than N20,000.00 (\$102.04) per month. (Figure 1)

Figure 1: Average monthly income of study population



Current exchange rate: \$1.00 = N196 (official rate), N320 (parallel market)

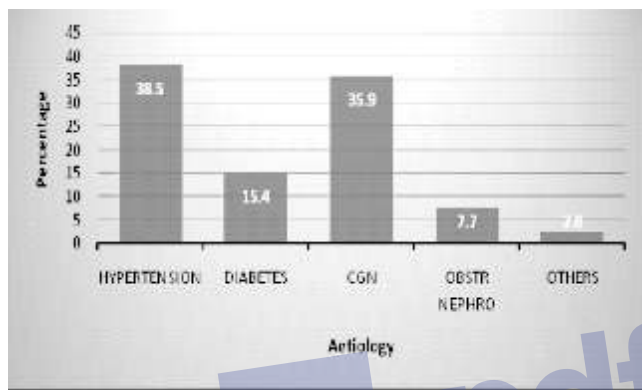
Table 1: Socio-demographic characteristics of study population

VARIABLE	FREQUENCY	PERCENTAGE
Age distribution		
10-19	2	5.1
20-29	5	12.8
30-39	7	17.9
40-49	9	23.1
50-59	10	25.6
60-69	3	7.7
70-79	2	5.1
80 above	1	2.6
Sex		
Male	25	64.1
Female	14	35.9
Educational level		
No formal	3	7.7
Quran	3	7.7
Junior secondary	2	5.1
Senior secondary	12	30.8
Tertiary	19	48.7

Occupation	Frequency	Percentage
Farming	1	2.6
Business	11	28.2
Civil Servant	13	33.3
House wife	4	10.3
Unemployed	7	17.9
Others	3	7.7

The predominant cause of ESRD among the study population was hypertension (38.5%), followed by chronic glomerulonephritis (35.9%) and diabetes mellitus (15.4%). One patient (2.6%) developed ESRD from HIV associated nephropathy (HIVAN). (Figure 2)

Figure 2: Aetiology of ESRD among study population



CGN (chronic glomerulonephritis), OBSTR NEPHRO (obstructive nephropathy)

Table 2: Duration on haemodialysis

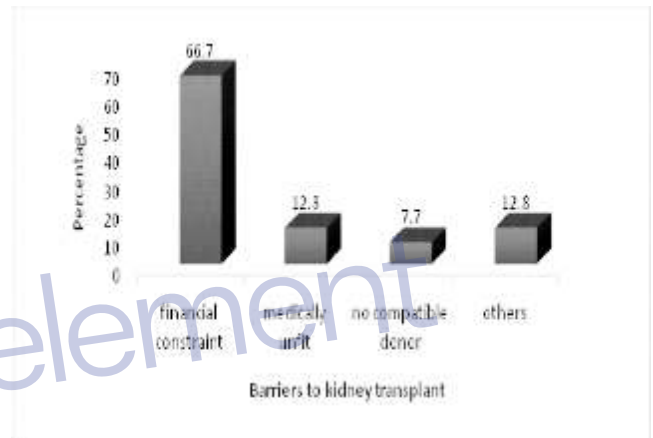
Duration	Frequency	Percentage
<=6months	16	41.0
7-12months	12	30.8
13-18months	3	7.7
19-24months	2	5.1
>24months	6	15.4
Total	39	100

Majority of the patients interviewed had been on maintenance haemodialysis for less than 6months (41%) while 12 (30.8%) patients have been undergoing haemodialysis for between 7 to 12 months. 6 (15.4%) patients have been on this mode of treatment for over 2years as at the time of the interview.

35 (89.7%) of the patients had been counselled kidney transplant but none of them has been transplanted. Most of the patients interviewed were aware that kidney transplant can be performed in Nigeria (31, 79.5%), and up to 33 (84.6%) of them were willing to have their kidney transplant done in the country instead of travelling abroad.

Financial constraint was the main reason limiting kidney transplantation in majority of the patients (26, 66.7%). Five patients (12.8%) were medically unfit either due to advanced age or presence of comorbidities while 3 (7.7%) patients could not find a compatible donor. (Figure 3) Other reasons given for not having had kidney transplant include religious belief, not psychologically ready and one patient had a previous kidney transplant that failed.

Figure 3: Barriers to Kidney Transplantation among study population



DISCUSSION

It is now generally accepted that kidney transplantation is a more effective, as well as a more cost-effective therapeutic option than haemodialysis in patients with ESRD, providing substantial benefits in quality of life at reduced long-term cost, as kidney transplantation leads to a cost benefit in the second and subsequent years¹⁷. At 36 months, Kalo et al.¹⁸ reported that the standard mortality hazard function for patients on haemodialysis was 3.5 times higher than that for kidney transplant recipients (p < 0.0001), and the average cost of treatment per patient over a three year period was significantly higher in the haemodialysis group than in the group that received kidney transplant (p < 0.0001). In the United Kingdom, the National Kidney Federation estimated the cost benefit of kidney transplantation compared with dialysis as £241,000 over a period of ten years, the median transplant survival time¹⁷. Additionally, the Canadian Institute for Health Information had estimated a 5-year cost savings of \$250,000 per patient following kidney transplantation when compared with dialysis

replacement therapy¹⁹. Despite these facts, kidney transplantation rates in developing countries remain low compared to developed countries, due to several constraining factors.

Financial constraint was the predominant barrier to kidney transplantation among the patients on maintenance haemodialysis interviewed in this study as kidney transplantation like dialysis is self-funded. This finding is not surprising as majority of the patients earned less than N20000.00 (\$102.00) per month with average monthly income of the study population put at N67512.82 (\$344.45). The economic power of this study population is by every definition poor and paints the picture of what is obtainable in most developing countries like Nigeria where a high proportion of the inhabitants live below the poverty level of 1\$ per day²⁰. In Sudan, Hisham et al.²¹ also reported financial constraint as the main factor responsible for the low transplant rate among patients on maintenance haemodialysis, similar to the finding in this study.

Though kidney transplant is more cost-effective in the long-term, it has a huge financial outlay at the onset that exceeds that of maintenance dialysis in the first year²³. In Nigeria like many other developing countries, government subsidy for kidney transplantation is virtually non-existent and National Health Insurance Scheme does not cover more than six sessions of haemodialysis. Funding of kidney transplant preparation, surgery and maintenance therapy is usually borne by patients and/or their relations directly and/or through funds sourced from employers, government donation, philanthropists etc²². Additionally, because of limited kidney transplant facilities and shortage of trained man power, even ESRD patients who are willing to have KT in Nigeria would need to embark on medical tourism abroad, further compounding the cost. The outcome is that majority of these patients would never be able to afford KT resulting in high mortality. Poverty is thus a major limiting factor to RRT including kidney transplantation in developing countries^{6,15}.

By World Health Organization estimates, at least 200,000 people are on waiting lists for kidney transplantation globally²³. Living donors, which by no means come close to meeting the demand for kidney transplantation, have continued to be the major source of transplantable kidneys in developing countries due to lack of legislation and infrastructure that has prevented growth of deceased donor programs²⁴. In Nigeria, a total of 143 kidney transplants were performed in five transplant centers between 2000 and 2010 and all the kidneys were sourced from living related donors as there is no deceased donor program in Nigeria²². In this study, 7.7% of the patients

interviewed could not find a compatible donor and remained on long-term haemodialysis. This proportion is less than the 20% reported by Hisham and colleagues²¹ from Sudan and may be due to the difference in sample size. However, it's also a reflection of the good attitude towards kidney donation in Nigeria.

In our study, five (12.8%) patients preferred to remain on maintenance haemodialysis because of their religious beliefs and fears regarding kidney transplantation. One patient believed that God would miraculously heal him, and another who has had a previous kidney transplant that failed would not go for another for fear of rejection. The other patients said they were not psychologically ready. In a similar study from Sudan²¹, religious and cultural beliefs, as well as fear of causing harm to the donor, kidney rejection, post-op complications and death from surgery were some of the reasons hindering patients from going for kidney transplantation. These fears and misperceptions entertained by patients and potential donors may be due to poverty of information regarding kidney transplantation.

This study is limited by the relatively small study population. However it provides valuable information regarding constraints faced by patients in accessing renal transplantation. The authors also realize that challenges of skilled manpower and adequate supporting infrastructure are barriers to kidney transplantation in Sub Saharan Africa and these were not researched in this study.

CONCLUSION

Overall, though majority of the patients are aware and willing to have kidney transplantation instead of continuing on maintenance haemodialysis, financial constraint, donor shortage and misperceptions regarding kidney transplantation are major barriers. In order to improve the transplant rates in Nigeria, attention needs to be focused on socioeconomic empowerment of the populace, healthcare infrastructure and man power development, as well as enactment of legislature to enable the establishment of renal registries, deceased donor programs and National Health Insurance coverage of kidney transplantation.

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