Late Referral and Associated Factors among Chronic Kidney Disease Outpatients in Southern Nigeria

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Abstract

Background: Chronic kidney disease (CKD) is a recognized noncommunicable disease that contributes to the global disease burden. Studies on late referral (LR) of CKD patients to the nephrologist have reported incidence rates of 22%–58% according to the definition of LR used. CKD patients who present late to the nephrologist tend to have poorer outcomes with increased morbidity and mortality. Aim: The aim of the study is to determine the prevalence of LR and associated factors among CKD outpatients. Materials and Methods: A cross-sectional observational study, in which CKD patients attending the renal outpatient clinic of two tertiary hospitals over a period of 6 months, were recruited. LR was defined as commencement of renal replacement therapy within 3 months after the first presentation to a nephrologist. Results: A total of 181 participants were recruited during the period of study; 114 were men. One hundred and twelve participants (61.8%) had stage 5 CKD, of which 97 had commenced maintenance hemodialysis. The prevalence of LR was 44.8% (81/181) (95% confidence interval: 37.4%–51.9%). Lack of funds was the most frequent reason given by participants who delayed after formal referral to a nephrologist. Being a known diabetic was associated with LR. Age, gender, level of education, occupation, being a known hypertensive, or known diabetic were not significant predictors of LR. Conclusion: Prevalence of LR is high. Education of medical practitioners, patients, and the general public on early symptoms and physical signs of kidney disease is required. Initiation of all-encompassing health insurance scheme is necessary to solve the problem of lack of funds for medical consultation and treatment.

Keywords: Chronic kidney disease, late referral, prevalence

Résumé

Contexte: La maladie rénale chronique (MRC) est une maladie non transmissible reconnue qui contribue au fardeau mondial de la maladie. Études sur référence tardive (LR) des patients atteints de néphropathie chronique chez le néphrologue ont signalé des taux d’incidence de 22% à 58% selon la définition de la LR utilisée. Les patients atteints d’IRC qui se présentent tardivement chez le néphrologue ont tendance à avoir de moins bons résultats avec une morbidité et une mortalité accrues. But: Le but de L’étude vise à déterminer la prévalence de la LR et des facteurs associés aux patients ambulatoires atteints de néphropathie chronique. Matériels et méthodes: Une coupe transversale étude observationnelle, dans laquelle les patients atteints de néphropathie chronique fréquentent la clinique de néphrologie rénale de deux hôpitaux tertiaires sur une période de 6 mois, recruté. La LR était définie comme le début de la thérapie de remplacement rénal dans les 3 mois suivant la première présentation à un néphrologue. Résultats: Un total de 181 participants ont été recrutés pendant la période d’étude. 114 étaient des hommes. Cent douze participants (61,8%) ont eu stade 5 CKD, dont 97 avaient commencé une hémodialyse de maintenance. La prévalence de la LR était de 44,8% (81/181) (intervalle de confiance à 95%: 37,4% à 51,9%). Le manque de fonds est la raison la plus fréquemment invoquée par les participants qui ont tardé après avoir été officiellement dirigés vers un néphrologue. Étant un diabétique connu était associé à la LR. L’âge, le sexe, le niveau d’éducation, la profession, être un hypertendu connu ou un diabétique connu étaient prédicteurs non significatifs de la LR. Conclusion: La prévalence de la LR est élevée. Education des médecins, des patients et du grand public est nécessaire. Initiation d’un plan sanitaire qui couvre tous les services médicaux est nécessaire pour résoudre le problème des coûts liés au traitement.

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Chronic kidney disease (CKD) is a recognized noncommunicable disease that contributes to the global disease burden. It ranked 12th as the most common cause of death in the Global Burden of Disease Study of 2015 has been responsible for 1.1 million deaths worldwide.[1] In developed countries, where CKD sufferers do not have to pay for renal care, the financial burden of their expenditure is huge; for instance, in the United States, 34 billion dollars was spent by the MEDICARE (United States medical insurance program for the elderly) on people having dialysis therapy in 2015.[2] Thus, CKD prevention and retarding disease progression are being encouraged worldwide. CKD patients referred late to the nephrologist tend to have poorer outcomes with increased morbidity and mortality. In a study among patients commencing renal replacement therapy (RRT), those who presented late (<90 days before starting dialysis) had the highest mortality rate compared with those who required dialysis 90–364 days and >365 days after presentation.[3]

There is no consensus on the definition of the term “late referral.” Previous workers on late referral (LR) of CKD patients defined LR to mean initiation of dialysis 1, 3, or 6 months after the initial contact with nephrologists”. A classification of LR was suggested by Baer et al.[6] as avoidable and unavoidable LR. Avoidable LR pertains to CKD patients who had symptoms, signs, and laboratory results that indicated progressive renal impairment as opposed to unavoidable LR, where CKD patients had unpredicted rapid progression of the kidney disease. Studies on LR of CKD patients to the nephrologists have reported the incidence rates of 22%–58% according to the definition of LR used.[6]

Problems faced by CKD patients who present late for renal care include infections, malnutrition, improperly treated chronic anemia with substantial cardiovascular consequences, mineral bone disease, and lack of vascular access for dialysis. In a survey of end-stage renal disease (ESRD) patients, those with LR commenced dialysis with lower hematocrit, worse biochemical variables had longer hospital stay.[7]

Several reasons have been proffered for LR of patients for renal specialist care and include patients’ attitude, doctors’ attitude, use of serum creatinine as a screening tool for kidney disease, financial restrictions, and distance to renal facility.[8,9]

This study was carried out to determine the prevalence of LR among CKD outpatients and factors associated with LR. To the best of our knowledge, LR has not been studied among this subset of patients in our region.

**INTRODUCTION**

**MATERIALS AND METHODS**

This study was a cross-sectional observational study carried out in the renal outpatient clinic of two tertiary hospitals in Southern Nigeria over a period of 6 months (June 1, 2016–December 31, 2016). Participants were consecutive CKD patients who attended renal outpatient clinics during the period of the study. Potential participants were informed of the study, and their consent was obtained before recruited for the study. Ethical clearance was obtained from the Institutions’ Research and Ethics Committee.

Inclusion criteria were being aged 18 years and above, and a known CKD patient attending the outpatient clinic for at least a period of 3 months.

Patients seeing the nephrologists for acute kidney injury and other forms of renal disease apart from CKD were excluded from the study.

A structured questionnaire was administered to participants by attending doctors during the clinic visit. Information was also obtained from patients’ case files. Information obtained includes biodata, cause of kidney disease, duration of kidney disease, history and duration of diabetes and hypertension, knowledge of common causes of kidney disease, history of regular health checks, health seeking habits, delay in consulting a nephrologist and reasons for such delay, history of blood transfusions before presentation to a nephrologist, and duration of time between the first nephrology consult and commencement of dialysis.

LR was taken as commencement of RRT within 3 months of the first presentation to the nephrologist.[3]

Data were analyzed using IBM SPSS Statistics version 21 (IBM Corp., Armonk, New York, USA). Continuous variable (s) were expressed as mean and standard deviation. Categorical variables were expressed as frequency and percentages. Data were presented in tables, bar, and pie charts. Cross tabulation and Chi-square analysis were used to determine the significance of associations between LR and gender, education, occupation, being a known hypertensive, and a known diabetic. P < 0.05 was considered statistically significant. Binary logistic regression was used to determine significant predictors of LR.

**RESULTS**

A total of 181 eligible CKD patients were recruited during the period of study; 114 (62.9%) were men. The mean age of participants was 51.5 ± 14.5 years, with an age range of 18–82 years. Most participants were educated, 79 (43.6%)...
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Table 1: Characteristics of study participants (n=181)

| Parameter                             | Frequency (%) |
|---------------------------------------|---------------|
| Gender                                |               |
| Male                                  | 114 (63.0)    |
| Female                                | 67 (37.0)     |
| Highest level of education            |               |
| No formal education                   | 14 (7.7)      |
| Primary                               | 44 (24.3)     |
| Secondary                             | 44 (24.3)     |
| Tertiary                              | 79 (43.6)     |
| Occupation                            |               |
| Skilled workers                       | 88 (48.6)     |
| Unskilled workers                     | 52 (28.7)     |
| Retired/unemployed                    | 41 (22.7)     |
| CKD etiology                          |               |
| Chronic glomerulonephritis            | 35 (19.8)     |
| Hypertensive nephropathy              | 43 (24.3)     |
| Diabetic nephropathy                  | 59 (33.3)     |
| HIV-associated nephropathy            | 5 (2.8)       |
| Obstructive nephropathy               | 22 (12.4)     |
| Others                                |               |
| CKD stage                             |               |
| 1 and 2                               | 5 (2.8)       |
| 3                                     | 26 (14.4)     |
| 4                                     | 37 (20.6)     |
| 5                                     | 112 (62.2)    |
| Hypertension                          |               |
| Yes                                   | 136 (75.1)    |
| No                                    | 45 (24.9)     |
| Diabetes                              |               |
| Yes                                   | 71 (39.2)     |
| No                                    | 110 (60.8)    |
| Maintenance hemodialysis              |               |
| Yes                                   | 97 (53.6)     |
| No                                    | 84 (46.6)     |

One hundred and twelve participants had stage 5 CKD, of which 97 had commenced maintenance hemodialysis. Eighty-one of the dialysis patients commenced dialysis <3 months after the first presentation to the nephrologist, while 4 and 12 dialysis patients commenced hemodialysis 3–6 months and ≥6 months after presentation to the nephrologist, respectively. The prevalence of LR among the study participants was 44.8% (95% confidence interval: 51.9%–37.4%) [Figure 1].

The indices of LR considered in this study were regular health checks; at least annually, patronage of nondoctors for treatment, knowledge of common causes of kidney disease, previous blood transfusion, and delay in presentation after referral to a nephrologist [Figure 2].
The habit of having regular health checks or follow-up visits was low among participants for only 102 (56.8%) claimed to have regular health checks.

A third of participants, 56 (30.9%) consulted non-medical doctors (herbalists, drug sellers, pharmacists) for treatment before presentation to a nephrologist.

Significant anemia requiring blood transfusion tends to occur in moderate-to-severe CKD. Fifty-three (29.3%) participants were transfused with blood before referral to a nephrologist.

Knowledge of common causes of kidney disease among participants was poor for only 35 (19.3%) knew that untreated hypertension and diabetes could cause kidney disease.

Delay in seeing a nephrologist after referral was agreed by 29 (16.4%) participants and reasons given for delay included; lack of funds (58.7%), doctors’ strike (13.8%), denial (13.8%), no nephrologist in locality (10.3%), and fear (3.4%) [Figure 3].

Cross tabulation and Chi-square analysis showed that gender, level of education, occupation, and being a known hypertensive did not have any significant association with LR to the nephrologist, but being a known diabetic was significantly associated with LR, $P = 0.038$ [Table 2].

A binary logistic regression was done with LR as the dependent variable and age, gender, education, occupation, being a known hypertensive, and a known diabetic as independent variables.

The logistic regression model was not statistically significant $\chi^2 (6, n = 181) =6.81, P = 0.3390$. The model explained 50% (Nagelkerke $R^2$) of the variance in LR and correctly classified 57.8% of the participants [Table 3].

**DISCUSSION**

The prevalence of LR among participants of the study was high, 44.8% (81/181). This is comparable to the report by Adejumo et al.,[10] in which 50% of CKD patients studied required urgent hemodialysis at the initial presentation. A study in Southwest Nigeria reported a high proportion (74%) of patients with undiagnosed CKD requiring hemodialysis at presentation, but this study was done among CKD patients in the emergency room as opposed to our study done among CKD patients in the outpatient clinic.[11] It appears that the prevalence of LR is higher in developing nations compared to developed nations for a prevalence of LR of 24.3% and 35% were reported by Udayaraj et al. in the United Kingdom and Winkelmayer et al.[12] in the United States, respectively. Both studies also defined LR as commencement of RRT <3 months after initial presentation to a nephrologist.

Patients with kidney disease can be asymptomatic for months to years until they progress to ESRD.[13] In such cases, kidney disease could have been diagnosed earlier during routine health checks. In this study, only about half of the study participants claimed that they had regular medical checks. Opportunities for compulsory medical checks such as before admission into a new school, preemployment, and annual health checks enforced by some organizations on their workers could serve as instruments for the early detection of occult renal disease.

The lack of medical insurance coverage for majority of the Nigerian populace negates regular health checks.

A third of study participants agreed to have consulted nonmedical doctors for solution to their medical problems. This practice is common in Nigeria and contributes significantly to LR of ill persons to hospitals for appropriate treatment. These alternative places of treatment include herbal homes, spiritual and originate from the devil, also the fear of high hospital bills encourages patronage of pharmacy shops and patent medicine stores.[14]

Almost, a third of participants (29.3%) had a blood transfusion before referral to the nephrologist. This may represent LR to the nephrologists, because anemia occurs in mild-to-moderate...
This indicates that these patients could have been referred to a nephrologist earlier if CKD was suspected. Thus, all cadres of health personnel have a role to play in the early identification of CKD and prompt referral to the nephrologist for timely management.

Hypertension and diabetes are common causes of kidney disease, yet only about a fifth (19.3%) of participants knew that poorly treated and long-term hypertension and diabetes could lead to CKD. A similar finding was reported in a rural community in Southwest Nigeria and a suburban community in Southeast Nigeria. The low knowledge of Nigerians on the complications of hypertension and diabetes probably contributes to LR to nephrologists. Education of the general population through the mass media, workshops, church meetings, and at follow-up clinics for hypertension and diabetes would improve earlier symptom recognition and presentation at appropriate health facilities.

Patient-related factors also contribute to LR. An attempt was made in this study to assess patient-related reasons for delay after formal referral to a nephrologist. Twenty-nine (16.4%) participants admitted to having delayed before presentation to a nephrologist after referral. Among the reasons proffered for this was lack of funds, disease denial, doctors’ strike, and lack of nephrologists in the area. Funding of medical treatment in Nigeria largely rests on the shoulders of patients and relatives, for the current National Health Insurance Scheme caters for few Nigerians and does not support chronic dialysis. A study in Southern Nigeria showed that even civil servants in Nigeria cannot afford RRT based on their annual income. Denial of disease is a form of defense exhibited by some Nigerians, because it is believed that accepting a diagnosis shows a lack of faith in divine healing. Thus, some patients may delay and only present in the emergency room when they require urgent RRT. The health sector in Nigeria has experienced strikes by health workers on a regular basis during which the teaching and general hospitals are either shut down or only render skeletal health services. This could contribute to LR of CKD patients. The teaching hospitals, where specialists are found are mostly located in the big cities in Nigeria, leaving the rural areas devoid of renal care services. Thus, CKD patients in the rural areas may have difficulty accessing renal care services. Being a known diabetic was associated with LR (P = 0.032), and this finding may indicate that primary care physicians of diabetic patients tend to refer them late to the nephrologist. The guidelines suggest that CKD patients be referred to the nephrologist in CKD stage 4 disease (glomerular filtration rate [GFR] <30 ml/min). Age, gender, education, occupation, being hypertensive, or diabetic did not significantly predict LR of participants in this study. This finding is at variance with previous reports that showed poor socioeconomic status to be a major contributor to LR. This means that the problem of LR cuts across all age groups, cadres of workers, and educational status among Nigerian CKD patients. To encourage the early referral of CKD patients to the nephrologist, awareness of both patients and health-care givers need to be improved.

There is a need to reduce to the barest minimum, LR of CKD patients to the nephrologist in order to reduce its morbidity and mortality. Possible ways to achieve this include the following: massive enlightenment campaigns to the general public through the social media platforms, mass media, churches, and social clubs on the need for regular, at least annual health checks, and consulting the right health personnel for health complaints. The population at risk of CKD; hypertensives and diabetics should be educated on the need for regular attendance at follow-up clinics. The Kidney Disease Outcomes Quality Initiative to reduce the prevalence of LR had recommended that GFR be estimated each time serum creatinine is assayed for a patient to stage CKD and encourage early referral. This practice is, however, yet to be adopted by most clinical laboratories in Nigeria. This should be enforced as the standard practice in all laboratories in Nigeria to aid early detection of CKD. Medical practitioners should be encouraged to carry out simple screening tests like urinalysis on at-risk patients to aid early detection of CKD. Limitations of this study include the following: health personnel-related factors leading to LR were not explored, and for participants who agreed to delay after formal referral to a nephrologist, the duration of delay was not quantified.

**Conclusion**

The prevalence of LR of CKD patients to the nephrologist was high. LR was not influenced by age, gender, level of education nor occupation of CKD patients. Known diabetic patients with CKD were more likely to be referred late. A good health insurance scheme with wide coverage, education of health care personnel and increase in public awareness of early signs and symptoms of CKD would reduce LR of CKD patients.

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**Conflicts of interest**

There are no conflicts of interest.

**References**

1. Wang H, Naghavi M, Allen C, Barber RM, Bhutta ZA, Carter A, et al. Global, regional, and national life expectancy, all-cause mortality, and cause-specific mortality for 249 causes of death, 1980-2015: a systematic analysis for the global burden of disease study 2015. Lancet 2016;388:1459-544.
2. United States Renal Data System (USRDS) 2017 Annual Data Report. Available from: http://wwwusrds.org/adr. [Last accessed on 2018 Dec 19].
3. Udayaraj UP, Haynes R, Winears CG. Late presentation of patients with end-stage renal disease for renal replacement therapy – Is it always avoidable? Nephrol Dial Transplant 2011;26:3646-51.
4. Korevaar JC, Jansen MA, Dekker FW, Boeschoten EW, Bossuyt PM, Krediet RT, et al. Evaluation of DOQI guidelines: Early start of dialysis treatment is not associated with better health-related quality of life. Am J Kidney Dis 2002;39:108-15.
5. Nakamura S, Nakata H, Yoshihara F, Kamide K, Horio T, Nakahama H,
et al. Effect of early nephrology referral on the initiation of hemodialysis and survival in patients with chronic kidney disease and cardiovascular diseases. Circ J 2007;71:511-6.

6. Baer G, Lameire N, Van Biesen W. Late referral of patients with end-stage renal disease: An in-depth review and suggestions for further actions. NDT Plus 2010;3:17-27.

7. Dogan E, Erkoc R, Sayarlioglu H, Durmus A, Topal C. Effects of late referral to a nephrologist in patients with chronic renal failure. Nephrology (Carlton) 2005;10:516-9.

8. Levin A. Consequences of late referral on patient outcomes. Nephrol Dial Transplant 2000;15 Suppl 3:8-13.

9. Salman B, Tahir M, Qureshi R, Dhrolia MF, Ahmad A, Imtiaz S. Factor causing late referral of CKD patients to nephrology care. Arch Renal Dis Manag 2017;3:26-9.

10. Adejumo OA, Akinbode AA, Okaka EI, Alli OE, Ibukun IF. Chronic kidney disease in Nigeria: Late presentation is still the norm. Niger Med J 2016;57:185-9.

11. Bello BT, Ojo OE, Oguntunde OF, Adegbeye AA. Chronic kidney disease in the emergency centre: A prospective observational study. Afr J Emerg Med 2018;8:134-9.

12. Winkelmayer WC, Glynn RJ, Levin R, Owen W Jr., Avorn J. Late referral and modality choice in end-stage renal disease. Kidney Int 2001;60:1547-54.

13. Lameire N, Wauters JP, Tuerel JL, Van Biesen W, Vanholder R. An update on the referral pattern of patients with end-stage renal disease. Kidney Int Suppl 2002;80:27-34.

14. Chukwuezui CO, Anelechi AB. Factors associated with delay in seeking medical care among educated Nigerians. Asian J Med Sci 2009;1:302.

15. Hsu CY, Bates DW, Kuperman GJ, Curhan GC. Relationship between hematocrit and renal function in men and women. Kidney Int 2001;59:725-31.

16. Oluyombo R, Ayodele OE, Akinwusi PO, Okunola OO, Gbadegesin BA, Soje MO, et al. Awareness, knowledge and perception of chronic kidney disease in a rural community of South-West Nigeria. Niger J Clin Pract 2016;19:161-9.

17. Okwuonu CG, Chukwuonye II, Ogah SO, Abali C, Adejumo OA, Oviasu E, et al. Awareness level of kidney functions and diseases among adults in a Nigerian population. Indian J Nephrol 2015;25:158-63.

18. Khan HI, Catto GR, Edward N, MacLeod AM. Chronic renal failure: Factors influencing nephrology referral. QJM 1994;87:559-64.

19. Ojeh-Oziegbie OE, Okaka EI, Oviasu E. Cost Evaluation of haemodialysis for end stage renal disease patients: Experience from Benin City, Nigeria. Ann Biomed Sci 2013;12:86-97.

20. National Kidney Foundation. K/DOQI clinical practice guidelines for chronic kidney disease: Evaluation, classification, and stratification. Am J Kidney Dis 2002;39:S1-266.

21. Obialo CI, Oflie EO, Quashie A, Martin PC. Ultralate referral and presentation for renal replacement therapy: Socioeconomic implications. Am J Kidney Dis 2005;46:881-6.