

CHALLENGES IN THE MANAGEMENT OF KIDNEY DISEASES AMONG PATIENTS IN KANO

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ABSTRACT

The study examined some challenges in the management of kidney disease among patients in Kano state. Stratified sampling technique was used to select 46 males and 26 females out of the over 100 renal patients from Aminu Kano teaching hospital (AKTH) and Abdullahi Wase specialist hospital (formerly known as Nassarawa). Prior to the commencement of data collection approval was sought and given by the management of the two hospitals. Data was derived primarily from interview, questionnaire administration and participant observation. In addition hospital based record of patients was obtained from the dialysis unit of the hospitals. The results of the study show that there are some challenges faced by patients in the management of the disease long after being diagnosed. The response gotten from patients show that some of the challenges were attributed to inadequate information on the graveness of the disease, inadequate income resulting from the low socio economic status of patients, inadequate dialysis centres and dialysis machines in the two hospitals located in the metropolitan which meant that those far away from the metropolitan area have to contend with distance. Other factors included the long term nature of treatment which as a result some patients tried out alternative treatment. The costs of the therapy has both socio economic and psychological implications for the patients and their family and these were found to include cut in social spending, increased expenditure on health, frequent illness, loss of job, decrease in number of hours put to work, matrimonial problems. Based on the findings of this research it is being recommended that the National health Insurance Scheme should be expanded to include all and sundry and to cover all health needs of the renal patients. There is also the need to establish more dialysis centres close to the rural people.

Keywords: Renal Replacement Therapy (RRT), Dialysis, Renal Transplant, Gender and Development.

1.0 Introduction

Access to healthcare can be defined as the ability to secure a specified range of services at a specified level of quality, whilst in the possession of a specified level of information. Accordingly, access to healthcare is not limited to physical accessibility but is also influenced

by both affordability and the level of awareness of the existing healthcare services. Facilitating access is concerned with helping people to command appropriate health care resources in order to preserve or improve their health. ... If services are available and

there is an adequate supply of services, then the opportunity to obtain *health care* exists, and a population *may* 'have access to services (National chronic Kidney disease Fact Sheet.2017).

It has been argued that the limited access to, and affordability of, healthcare by people in low socio-economic status areas demonstrates the inverse care law (Julian, 1971;National Chronic Kidney Disease Fact Sheet, 2017).The law states that: "The availability of good medical care tends to vary inversely with the need for it in the population served. This operates more completely where medical care is most exposed to market forces, and less so where such exposure is reduced." Inverse care law can be summed up as a situation where in areas with most sickness and death, general practitioners have more work, larger lists, less hospital support, and inherit more clinically ineffective traditions of consultation, than in the healthiest areas; and hospital doctors shoulder heavier case-loads with less staff and equipment, more obsolete buildings, and suffer recurrent crises in the availability of beds and replacement staff (Julian 1971;National Chronic Kidney Disease Fact Sheet,2017).

Chronic Kidney Disease (CKD) is recognized as a major contributor to the global burden of disease in both rich and poor countries. If detected at an early stage, treatment is relatively inexpensive (relative to the end stage kidney disease which may require kidney transplantation) and the condition often progresses no further.

CKD is a growing problem in Nigeria, due to the lack of a national CKD register, the national prevalence rate is not known. Hospital-based data estimated that CKD patients accounted for 2% to 4% of hospital admissions, yet in 2007 estimates of between 10% and 12% were reported. CKD is categorised into five stages at diagnosis, with Stage 5 also known as end stage renal disease

(ESRD) indicating a total or near-total loss of kidney function, needing renal replacement therapy such as dialysis or a kidney transplant. The early detection of CKD is one of the best ways of treating and managing the disease (National Chronic Disease Fact Sheet 2017).

The causes of delay in Renal Replacement Therapy RRT have been identified to include socioeconomic and cultural characteristics and decision-making strategies of the individuals patients and their family (which shape access to money and information (education and information) precise decisions in order to get to the health facility. Others are gender status, illness factors, i.e. individuals' perception of his illness, attitudes and beliefs about health system service i.e. efficient and suitable service providers and quality of medical care (associated with the availability of essential equipment and facilities. The availability of medical personnel and the nature of bureaucratic processes of admitting and treating patients, geographical setting that shapes physical accessibility, such as transportation networks and routes distances in other words accessibility are also crucial in causing delay in RRT(Dirks *et al.*, 2006; Chukuze *et al.*, 2009).

Speaking from the economic perspectives, in Nigeria, studies such as those of Chukuze *et al*, 2009;. Akande *et al*, 2009, Oviasu *et al* 2015; John *et al* 2015) have shown that the majority of patients are diagnosed at the final stage of the disease when the cost of treatment is usually beyond the financial capacity of the average citizen. Despite the fact that healthcare is currently managed by the three tiers of Government: the federal government provides tertiary or specialised health care in all the teaching hospitals spread all over the country, the state government manages the general hospitals (secondary healthcare) and local government focuses on primary healthcare, patients are responsible for their medical bills except of course with the introduction of the National Health

Insurance Scheme (NHIS), which covers 90 percent of the cost of some basic health services, which unfortunately does not cover chronic diseases such as kidney failure. It can thus be assumed that the majority of patients with Kidney disease are expected to pay for any healthcare service that they receive (Olutayo *et al* 2006; Bamgboye, 2003; Chukuze *et al* 2009).

In addition to the cost of the therapy, distance from the facilities equally poses a challenge in that most of the facilities are found in the metropolitan areas and given the nature of the Nigerian road transportation it can have a significant impact on the effectiveness of CKD management within the country. A general overview is that, access to tertiary care, including specialised healthcare for chronic diseases, is limited as these services are located in large urban areas since majority of the rural population are too poor to pay for the service and as therefore such services are found in the urban areas where there is the population threshold to sustain the facility.

Thus, low socio economic status and poverty associated with most developing countries in general and Nigeria in particular and the resultant limited access to social infrastructures including limited access to health care have been found to be among the challenges faced by renal patients in the management of the disease.

This study therefore examined some challenges of patients in the management of kidney disease in Kano state with a view to analysing the reasons for and the extent to which these reasons /factors and have implication delay in RRT.

To achieve the aim of the study, a description of the personal characteristics of renal patients, their access to RRT, the frequency or otherwise of follow up by patients, the causes of infrequent RRT, the extent to which these vary across gender and implication on the personal, social and

economic development of the patients in particular were considered.

Theoretical Framework

This research is premised on the Behavioural Model. The behavioural model of health (BM) as propounded by Andersen M. R. in 1968 is most valuable in the understanding of the perceived effects of socio-economic status in the utilization of health care services by patients which has been widely documented and used to determine predictors of access to health care (John *et al.*, 2015). The behavioural Model is explained under the following factors:

Predisposing factors: these includes demographic characteristics of gender, marital status, age and sex as biological necessities; social factors such as education, occupation ethnicity and social relationships (e.g., family status), and mental factors in terms of health beliefs (e.g., attitudes, values, and knowledge related to health services and health).

Enabling Factors: these include financing factors such as income and wealth at individuals' disposal, which enables them to pay for health services and the effective price of health care or the quality of health care; which is determined by individuals' health insurance status. Financing here covers per capital income, affluence, the rate of health insurance coverage among others.

Need factors: at the individual level Andersen and Newman (1973) cited in John *et al* (2015) differentiate between perceived need and evaluated need. The perceived need include how people view and experience their own general health, functional state and illness symptoms and evaluated need refers to professional assessment and objective measurement of patients' health status and need for medical care.

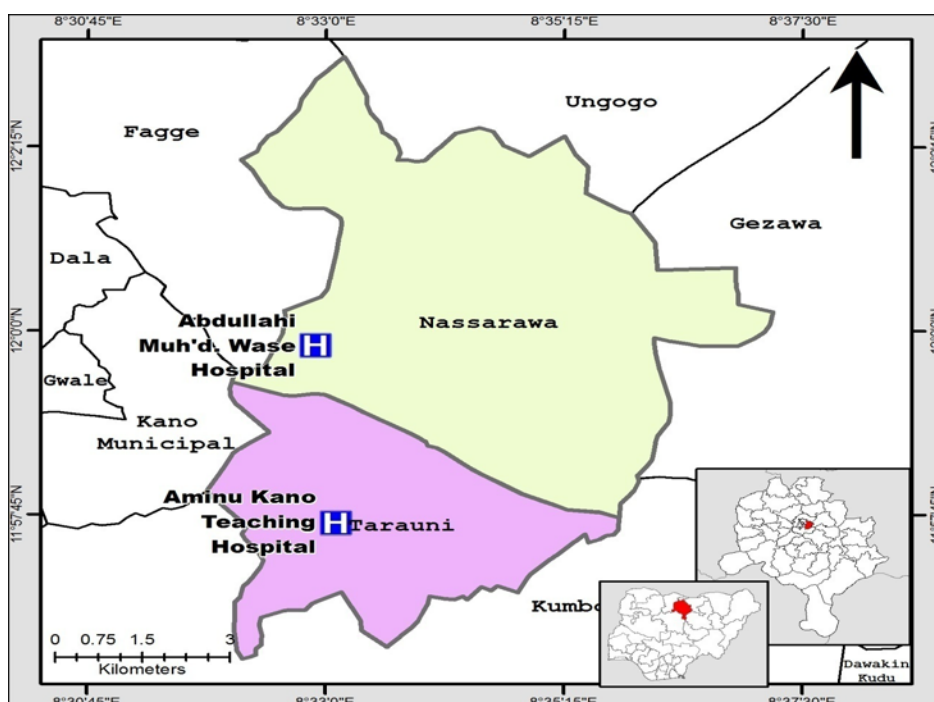
This model identifies education and occupation as one of the factors under the predisposing characteristics that determine the use of health care, access and utilization.

These demographic positions according to Andersen equip individuals' belief and consequent utilization of health services this part carefully delineates the vantage point that education and occupation occupy in the life of individuals as they utilize health care services. Also, income as part of the key variables in the study, falls in the second category (enabling characteristics) upon which health care utilization is premised as it includes resources found within the community and the family (John *et al*, 2015). Thus, here income has the capability of directing not only where health care is available but the quality of health care services utilized by the populace. The need based characteristics also includes the

perception of needs for health services which leads to the actual utilization of health care services (John *et al* 2015).

Study Area and Methods

The study examines some of the challenges in the management of kidney disease by patients and the management of the hospitals in the study areas. The study was carried out in Kano state. Kano state is located between latitude $10^{\circ}30'N$ to $12^{\circ}30'N$ and Longitude $7^{\circ}30'E$ to $9^{\circ}25'E$. It is bordered to the north and east by Jigawa state, to the west by Katsina and Kaduna states and to the south by Kaduna and Bauchi states. (Figure 1).



Source: Cartography Department, Bayero University, Kano

Figure 1: Location of Aminu Kano Teaching Hospital (AKTH) and Abdullahi Wase Hospital in Kano

Methods

The main sources of data for the study were drawn from primary and secondary. Data from the primary sources was gotten through

interview, participant observation, and questionnaire administered to the samples drawn from the target population of registered renal patients in the two hospitals.

Before the collection of data from the patients and staff of the two hospitals, ethical approval was sought and gotten from the management of the two hospitals. After which the population was stratified into males and females and a total of seventy two samples were purposively picked from a sampling frame of 60 males and 44 females' patients in AKTH and Nassarawa hospitals respectively.

The data collected was analysed using descriptive statistical techniques. Hospital based records of renal patients from 2010 to 2011, 2015 and 2017 were reviewed and

formed part of the secondary data used. The hospital data provided information on the history of the disease, diagnosis, therapy sessions, costs of treatment, distance from domiciles, frequency of therapy and other relevant information.

A total of 72 samples were purposively selected from the two hospitals Aminu Kano Teaching Hospital (AKTH) and Abdullahi Wase Specialist (Formerly known as Nassarawa) hospitals. The results of the study is shown in tables and discussed below.

Table 1: Sampling Frame and Sample Size

Sex	AKTH		NASSARAWA		Overall Total	
	N	Sample size	N	Sample size	N	Sample Size
MALES	46	38	14	8	60	46
FEMALES	32	20	12	6	44	26
Total	78	58	26	14	104	72

Source: Fieldwork, 2017

Results and Discussion

The result in table 1 shows there are more male patients than female patients with 60 (58%) males and a total of 44 (42%) females. This gender variation has been observed in most study on kidney diseases for instance in a study carried out by Dirks *et al* (2006) in the United States of America it was found that a slightly higher number of males (3,093,849) than females (3,056,384) were diagnosed with kidney disease as of the year 2001(Dirks *et al*,2006).

The age analysis in table 2 shows that majority of the male (78%) and of female (69%) patients were between the age brackets of 31 to 50years. Few cases of patients below the age bracket of 20 is shown among the

males < 5% and a slightly higher number of female patients (8%) were found in that age bracket. This age bracket confirms the findings of Dirks' *et al* (2006) which opined that the diseases affects all age groups from less than 1 year to more than 70years with the peak age of onset being the third decade and the prevalence increases with age until 70. The implication of the age issue on human resource development cannot be underestimated since majority of the respondents both males and female with the disease are within those years considered as active years of labour participation(Chukuze *et al*,2009;.Akande *et al*, 2009, Oviasu *et al* 2015; John *et al* 2015).

Table 2: Age and Marital Status of Respondents

AGE OF RESPONDENTS	MALES		FEMALES	
Age Group	F	%	F	%
<20	2	4.3	2	8
20-30	11	24	6	23
31-40	10	22	8	31
41-50	18	39	5	19
Over 50	5	11	5	19
Total	46	100	26	100
Marital status				
Married	30	65	14	53
Single	16	35	6	23
Divorced	0	0	2	8
Widowed			4	15
Total	46	100	26	100

Source: Fieldwork, 2017

The results in Table 3 on the respondents' level of education shows that approximately one third (34.7%) of males and a little over half (57.6%) of females respectively had Quranic education while less than one quarter 21.9% of the males and a slightly higher than a quarter (26.9%) of females had secondary education. The implication of this on health education cannot be over emphasised as lack of education/ information could contribute to care free attitude of patients in the management of disease in general and kidney

in particular. Education is seen as instrument per excellence and is seen to help shape individuals adoption of innovation such as that of adoption of modern medical facilities. This confirmed the findings of Akande et al, 2009. In a study carried out by Akande (2009), on Health seeking behaviour in Anyigba North – central, Nigeria. He was of the view that the high level of western education could have accounted for the relative shorter delays by patients in seeking medical care in the area studied.

Table 3: Education of respondents

	MALES		FEMALES	
Education level	F	%	F	%
Qur'anic/Adult	20	43	17	65
Primary	4	09	1	4
Secondary	10	22	7	27
Tertiary	12	26	1	4
%Total	46	100%	26	100%

Source: Field work, 2017

Another personal characteristic of the patients which has a bearing on the management of renal disease by patients is their occupation. The data on occupation of the respondents in

table 4 shows that more females 18.5% are in the categories of others implying they are either full housewives or retirees while majority of the males 20% are into business

with approximately 14% being civil servants. The implication of this is reflected on the income (figure 2) of the respondents which also has implication for the frequency of therapy sessions the patients can afford since the government does not pay the medical bills for the RRT. In addition to determining affordability which is crucial to guaranty a

frequent renal treatment and management the lack of active participation in income generating activities on the part of the patients would create a gap in the economy of the patients, their family and the community and consequently have a bearing on development.

Table 4: Occupation of Respondents

Occupation	MALES		FEMALES	
	F	%	F	%
Farmer	8	17	0	0
Trader/Business	16	35	10	38
Civil servant	12	26	2	8
Others	10	22	14	54
Total	46	100	26	100

Source: Field Survey, 2017

The inference drawn from the figure 6 is that majority of the patients are in the category of low income earners which is a characteristics of most developing countries, identified by Dirks *et al*; 2006; Bamgboye *et al*,2003; Akande *et al* 2009;John *et al* 2015; Oviasu *et al* 2015;Chukuze *et al* 2009), as one of the key issues patients have to contend with in accessing renal therapy in most low income countries like Nigeria.

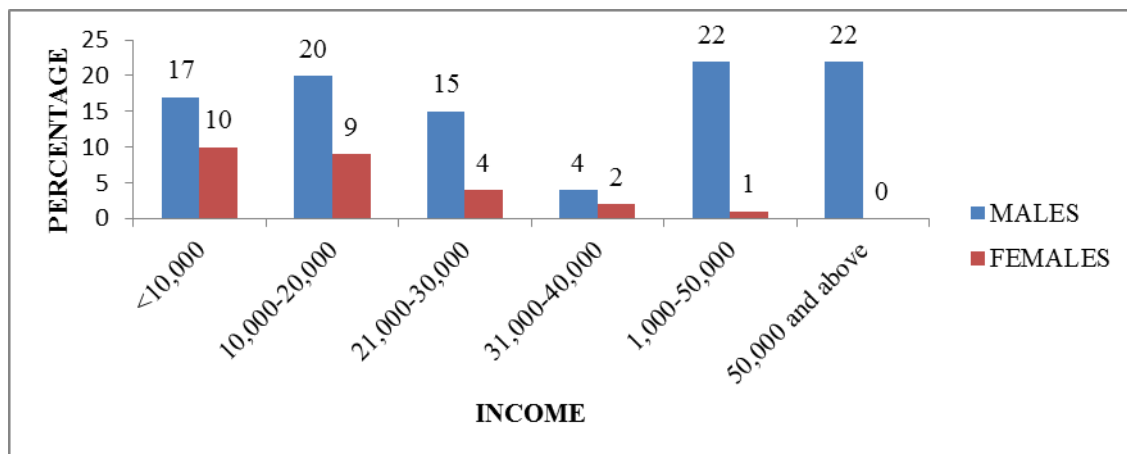


Figure 2: Income of the Respondent

Source: Field Work, 2017

The cost of the treatment is very crucial in determining RRT. Information gotten from the hospital based records and medical personnel

of the two hospitals shown in table 5 indicated that patients usually spend nothing less than 30,000 naira for their first session and ideally

for a healthy living, patients are expected to have three sessions of dialysis in a week thus including the drugs the patients are expected

to take, a patient may spend nothing short of 50,000 naira in a week (Hospital records and interview).

Table 5: Cost and Source of Funds for Therapy

Amount spent in a week	MALES		FEMALES	
<20,000	13	28%	9	35%
21-30,000	29	63%	12	46%
>30,000	4	9%	5	19%
% Total	46	100%	26	100%
Funding	MALES		FEMALES	
Sources of therapy funds	F	%	F	%
Self	17	36	3	8
Family/Fiends	22	48	21	80
Government	4	9	1	4
Others	3	7	2	8
Total	46	100	26	100

Source: Computed from the primary data, 2017.

According to table 5 on the money spent on the therapy, majority of the patients 63% males and 46% females spend between 21.000 -30,000 naira in a week. And for some of the patient this can be challenging given the low income whereby barely a quarter of the males earned more than 50,000 naira in a month and none of the females were found to earned that much. However there are instances when a patient has been on treatment for long in the hospital and unable to finance the therapy session at some point in time due to short of funds, the social welfare of Aminu Kano Teaching hospital do from time to time assist such patients in offsetting some of the medical bills.

Given the cost implication involved in the therapy and the economic crisis in Nigeria in recent times, financing three sessions of dialysis could be challenging to patients and as such have to be supported by their family and friends. As shown in Table 5 almost all the women (80%) got support from their family while a little than half (48%) of the male patients got support through the same source i.e. family. This situation contrast with what is

obtained in the industrialized world where treatment is readily available and is covered by government or private health insurance. (Schieppati, Perico, and Remuzzi: 2003).

Table 6 summarised the challenges faced by renal patients in the management of the disease in rank order. The table shows that less than one fifth (19%) of the male patients and female patients said they lacked adequate information on the graveness of the disease and this was a challenge since some of the patients (19%)tried alternative treatment as a result which compounded their health problem. For the females (18%) said inadequate information was also a challenge, as a result of which a little less than one fifth (18%) tried alternative treatment which compounded their health problem too.

Issue of financing the therapy has been a great challenge where less than one fifth (18%) of the female patients said lack of funds was a challenge to having adequate therapy and better health. Similarly less than one fifth (18%) of the males were of the view that inadequate funds was also a challenge to having adequate therapy by patients.

The cost implication is one of the factors that resulted in inadequate management of kidney disease among patients. To this some patients can afford to be on the treatment once, twice and thrice in times a week. The ideal therapy session for patients is said to be three times in a week (Hospital records and interview).

Thus given the financial burden involved patients could decide on a once twice or thrice session in a week therapy. As a participant observer I witness a number of cases where a great number of patients discontinue the therapy as a result of the affordability issue caused by low income and the high cost of maintenance dialysis. This agreed with an earlier finding in India of a public renal hospital which stated that:

"There was a discrepancy between the initial estimates of affordability of RRT by the patient and the actual numbers that continued on long term RRT. A higher proportion discontinued

RRT than what was originally estimated".
(www.academia.com)

The long nature of the therapy is also seen as a challenge by some of the patients where less than a quarter of the females (23%) were of the view that long term nature of therapy was one of the reasons they often skip the therapy session from time to time, while (12%) of the males had similar views.

As at the time of this study the only two therapy centres are located in the metropolitan Kano as such the study shows that 17% of the female patients said distance to therapy centres was a challenge and less than one fifth of the males were of the view that distance to the therapy centres was also a challenge too. Despite the distance covered by some patients, they could be challenged by inadequate therapy facilities as opined by (6%) of the males and (2%) of the females said was also a problem to adequate RRT.

Table 6: Some of the challenges in the management of Renal disease

Causes	MALES			FEMALES		
	F	%	Rank	F	%	Rank
Lack of information	6	19	Important	3	18	Important
Tried alternative treatment	6	19	Important	3	18	Important
No money	8	25	Most Important	3	18	Important
Long term nature of treatment	4	12	Less Important	4	23	Important
Distance/Transportation	6	19	Important	3	17	Important
Limited machines	2	6	Unimportant	2	6	Unimportant
Total	32	100		17	100	

Source: Field survey, 2017.

Key

25% Above Most Important
17% - 24% Important
9% - 16% Less Important
1% - 8% Unimportant

The results on table 7 shows the number of patients admitted between 2016 to 2017 and the type of therapy they have received. On the

type of RRT received by patients shown in the table it can be seen that , majority of the male 43 (91%) and 23(88%) of the female patients

are on haemodialysis only very few 4(9%) male and 3(12%) female patients (a total 47 since 2015 including those who did the transplant outside the two hospitals) have had renal transplant as of time of carrying out this research. This situation is despite the fact that researches have shown that kidney

transplants are the most cost-effective therapy to end stage renal disease and also increase the life span of patients by 30 % (higher quality of life is obtained transplant than with dialysis). (Schieppati, Perico, and Remuzzi, 2003)

Table 7: Renal Patients Admitted and treated between 2015 to 2017 in the Hospitals

Year	Number of Dialysis patients	Total Dialysis Sessions	Number of renal Transplant
2015	199	5,936	1
2016	362	9,058	1
2017	300	4,104	1
Total	861	19,098	3

Source: Computed from Hospital Based Records, 2017

Inadequate dialysis machines in the two hospitals sampled have been identified as one of the challenges faced by patients . For instance in AKTH out of the total 20 dialysis machines, slightly over half 11 (55%) are functioning as at the time of this study. And of this total two fifth 8 (40%) dedicated to patients who are hepatitis free and H.I.V negative while three of the machines are dedicated to patients who are hepatitis B,C and H.I.V positive(Field AKTH,2017 and Hospital based records).

In addition to inadequate machines, inadequate dialysers, blood tubing, heparin, bicarbonate, acid, femoral catheter, guide ware is also a challenge to the management of renal patients in both hospitals.

From the perspectives of the challenges faced by the hospitals are the numbers of medical personnel which was found to be inadequate given the large number of outpatients the doctors and nurses have to contend with on a daily basis. It was found that Aminu Kano teaching hospital has a total of 3 specialist/consultants and 25 nurses including those on training who come from some states in Northern Nigeria like Bauchi and Kaduna states while Abdullahi wase has one specialist and 6 nurses.

Some Socio Economic and Psychological Costs of Renal Replacement Therapy

With respect to socio economic and psychological costs of RRT, majority of the male patients (30%) and (31%) female patients said the number of hours put to job dropped. Computed from the hours spent for a normal dialysis session, for a patient on two sessions in a week, time loss is between 10-12 hours out of their jobs/work excluding of course travel time from their domiciles to the therapy centre. Added together therefore patients may spend up to 16-20 hours out of job in a week, the cost implication of this cannot be underestimated.

Other costs of RRT was found to include frequent illness and general body weakness where 10(22%) male patients and 8 (31%) female patients opined to, as result of which patients may be absent from their place of work for days, weeks or months As a participant observer i was absent from work for over a period of one year which was attributed to illness factor. And on the illness factor, studies have shown that the longer a patient gets on dialysis the more his health deteriorates and things get worst for him/her. In this regard it has been observed that in the

first year of dialysis the death rate is put at 25% and by the fifth year on dialysis the death rate is put at 65% (Medicare.com 2017).

The implication of this on labour force participation cannot be underestimated. It implies reduced number of time put to work, less income and more spending on health related issues as a result less spending on social issues.

The result in figure 3 shows that there has been cut in social spending where less than a quarter (22%) of the males and a slightly over ten percent (15%) of the females agreed to.

The increase in medical expenditure as earlier pointed out could partly explain why there was decrease in social spending.

Psychologically, many patients with kidney disease go through haemodialysis and as a result of the procedure involved they often are fearful and/or distressed about having to get stuck with large needles (femora catheter, and fistula plate 1) at the beginning of every Dialysis treatment and then having them removed at the end.

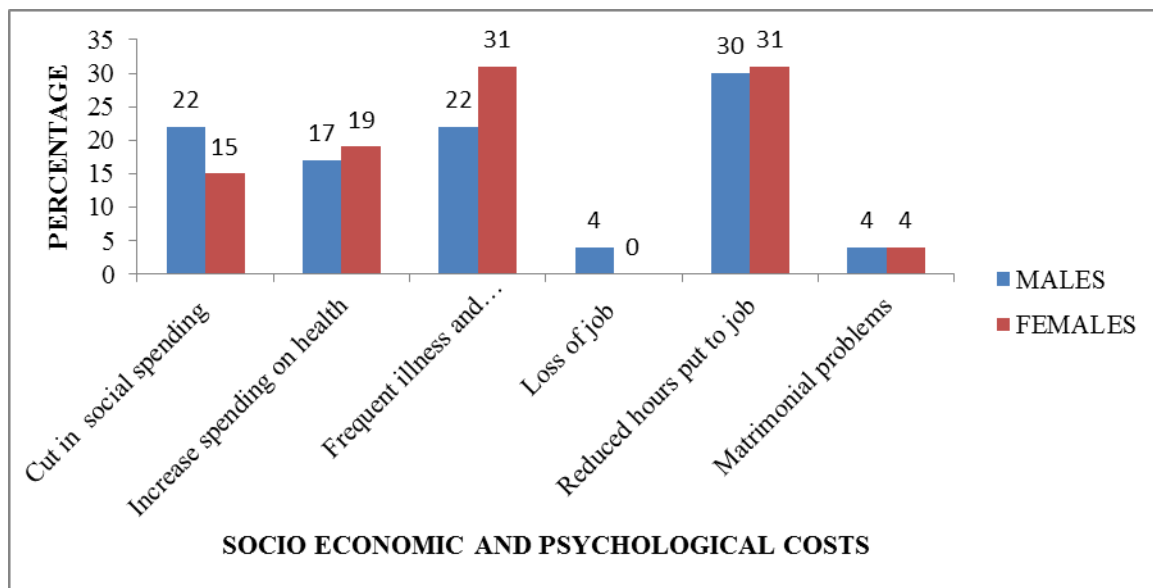


Figure 3: Socio economic and psychological costs of RRT
Source: Computed from primary data, 2017

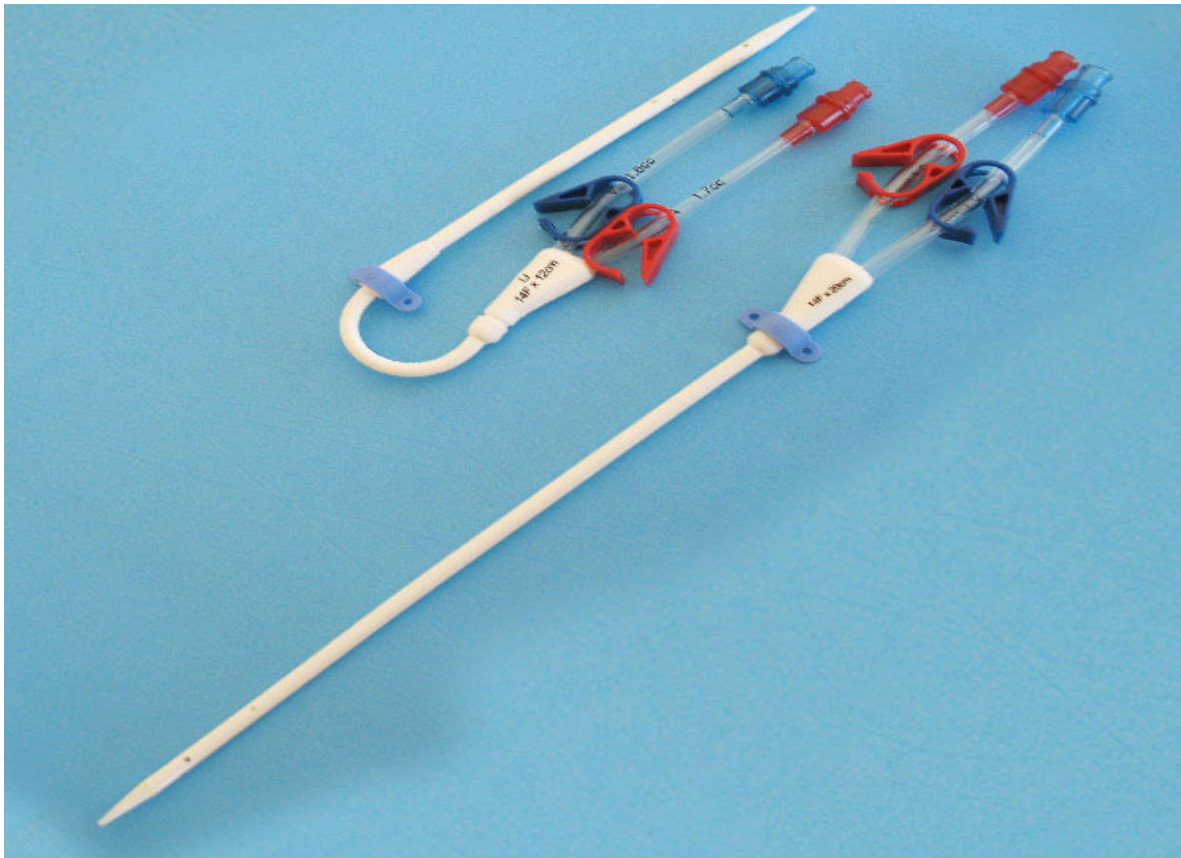


Plate 1: Femora Catheter and fistula

Conclusion and recommendations

The conclusion drawn from this study is that renal patients in the study area are being challenged by a number of socio economic and psychological issues which for most part was found to work against their health. It can also be concluded that the medical providers also had to contend with issues bordering on the provision adequate medical services to the renal patients viz a viz adequate staff and facilities for successful therapy sessions.

In view of the challenges identified in this study the following are recommended.

1. When patients are diagnosed with renal disease there is the need to counsel them by the hospital on the graveness of the disease.
2. The government and stakeholders should make health issues a priority especially terminal diseases such as kidney disease through provision of adequate funding.
3. The hospitals need to ensure that there are adequate therapy facilities so that patients have more efficient and effective therapy sessions.
4. There is the need for the establishment of more renal centres so that the problem of inadequate therapy sessions and distance/time travelled can be minimised.

References

- Akande, T. M., & Owoyemi, J. O. (2009). Healthcare-seeking behaviour in Anyigba, North Central Nigeria, *Research Journal of Medical Sciences*, Vol. 3(2), 47–51.
- Bamgboye E .L (2003).Haemodialysis: management problems in developing countries, with Nigeria as a surrogate. *Kidney International Suppl.* 2003 Feb ;(83):S93–S95. [PubMed]
- Brydon, L.andCharts,E (1985).*Women in the third world:Gender issues in rural and urban areas* Edward El gar publishing,England
- ChukuzeA,Chukuze C and Anelechi B (2009)Factors associated with delay in seeking medical care among educated Nigerians in *Asian journal of medical science* 1 (2) 30-32
- Dirks,J,RemuzziG.HortonS.SchieppatiA,andAdibul H (2006) Diseases of the Kidney and Urinary System (eds) in Diseases control and Priorities Project the World bank group. [Http://www.dcp2.org/pubs/dcp/36/section/5066](http://www.dcp2.org/pubs/dcp/36/section/5066)
- Julian Tudor Hart (1971) The inverse care law: The lancet [http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(71\)92410-X/abstract](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(71)92410-X/abstract) : Vol 297, No 7696 p405-412 accessed on 2017 28th December
- Liman, M., Idris, H.A and Muhammad, U.K (2014): Weather and climate of Kano region.
- In Tanko A.I and Momale S.B (Eds). Kano Environment, Society and Development. Adonis and abbey publishers
- National Chronic Kidney Disease Fact Sheet, 2017. Accessed on 28th December,2017
- Olofin, E.A (1985) A summary of the physical environment of Kano Region.Bayerouniversity,Kano.
- Olutayo,CAlebiosu, Olugbenga, O Ayodele, Adigun Abbas, and AinaOlutoyin(2006)*Chronic renal failure at the OlabisiOnabanjo university teaching hospital*, Sagamu, Nigeria.
- Oviasu, O Rigby E.J and Ballas ,D (2015) Chronic Kidney Disease in Nigeria: AnEvaluation of the Spatial Accessibility to Healthcare for Diagnosed Cases in Edo State *Journal of Public Health Vol 6(1)*,2015. Accessed on 27TH December 2017
- Schieppati, A., N. Perico, and G. Remuzzi, (2003). “The potential impact of screening and intervention for renal disease in developing countries” *Nephrology Dialysis Transplantation*18:858-59
- Schieppati,A.;Pericho and G. Remuzzi,: 2003;<http://www.beckershospitalreview.com/finance>accessed on 5th February 2018).
- Thaddeus S. and Maine D.(1990) *Too far to walk: Maternal Mortality* in context.PMMP Columbia University.
- Toshinko, L. (2003)*Health Care Challenges for Developing Countries with Aging Population* Washington DC :Population Reference Bureau.
- WHO (World Health Organization). (2002). “Reducing Risks, Promoting Healthy Life.” [WWW.academia.com.edu/././referralpattern_of_patients_wiyh_end_stage_renal Disease...](http://WWW.academia.com.edu/././referralpattern_of_patients_wiyh_end_stage_renal_Disease...) WWW.kidneycare.com