Psychological Stressors among Hemodialysis Patients in Selected County Dialysis Centre's in Kenya

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ABSTRACT

Introduction: Though hemodialysis treatment modality remains the most sought option among patients with kidney disease, the modality is associated with multiple psychological stressors that confronts the hemodialysing patients and subject them to mental disturbances and poor quality of life.

Study aim: The study aimed at describing the psychological stressors faced by the hemodialysis patients in the new county dialysis centers in Kenya and to correlate the psychological stressors to the patients' demographic characteristics.

Methodology: This was a descriptive correlation study among hemodialysis patients in four selected county dialysis centers in Kenya. Sample size was determined through a census method. Data was collected by means of a semi-structured questionnaire and analyzed using a Statistical Package for Social Sciences (SPSS) version 25.0.Findings were presented using graphs and frequency tables while Chi-square was used to test for the association between study variables.

Results: Despite opening new county dialysis centers, majority of the respondents identified inadequate number of hemodialysis machines as the major psychological stressor (M=2.9, SD ± 0.8) uncertainty in life (M=2.74, SD ± 0.6) and lack of hemodialysis commodities (M=2.69, SD=0.7) as the leading psychological challenges faced by the patients who are dialyzing in the newly opened county dialysis centres in Kenya. There was a statistically significant association (p=0.016) between waiting time for hemodialysis sessions and gender and also a significant association (p=0.04) between marital status and dependency on others to bring them for dialysis session.

Conclusion: Despite the Government initiative to increase the availability and accessibility of the hemodialysis services to hemodialysis patients, inadequate hemodialysis machines, lack of hemodialysis commodities and difficulties in raising the cost of treatment still remains the major psychological stressors among hemodialysis patients. Therefore, opening of new dialysis centers should be accompanied with adequate resource allocation to guarantee positive patient outcomes.

Keywords

Hemodialysis, Psychological stressors.

Introduction

Hemodialysis is usually the first line treatment modality among patients with end stage renal disease [1]. However, this treatment modality significantly and sometimes adversely affects the patients' quality of life. The affected aspects of quality of life are usually the physical, psychological and physiological aspects [2].

The psychological stressors among hemodialysis patients are those situations that confront the hemodialysis patient and subject them

to mental disturbances and worriedness state. These stressors includes: inadequate hemodialysis machines, waiting for so long to be assigned dialysis machine, high cost of treatment, breakdown of the machines, unemployment or loss of employment, uncertain on future life, dependency on their caregivers and loss of sleep [3].

The prevalence of long term dialysis continues to rise steadily worldwide [4].In sub-Saharan Africa, the nephrologists are faced with vast challenges in the management of the patients who require dialysis services due to non-availability of hemodialysis machines and the high cost of hemodialysis services as both the incidence and prevalence of end stage renal disease continues to increase [5].

As a result, there is a high demand and competition for the available hemodialysis machine that these service may be delayed for some patients as they have to wait and share the available resources together and this is worsened when the already available machines breakdown [6].

Unemployment has been reported as a major psychological stressor among hemodialysis patients [7]. In USA, employment rates among hemodialysis patients have been reported to be as low as 18.9%. End stage renal disease networks also reported that, 28% of the persons under the age of 54years who were receiving hemodialysis were employed in 1999 which later declined to 13% by the year 2013 [3].

The other psychological stressor is dependency. WHO reported that persons who dependent on others in performance of activities of daily living form 4-5% of the entire world population. This is deliberated as a big challenge among hemodialysis patients [8].

Generally, the health status of the patients on hemodialysis is quite poor. This is the main reason for their amplified dependency on other persons for survival. Other than the financial dependency brought about by unemployment, patients usually dependent on the medical staff for monitoring and prevention of any complications while they are on the hemodialysis machine [9].They also depend on family members and by extension on friends and well-wishers to be assisted in meeting their activities of daily living such as washing clothes, cooking, washing dishes, running errands, lifting and been accompanied to the hemodialysis center [10].

Due to the high demand of patient requiring hemodialysis services in Kenya the National government made a commitment to have all the hemodialysis services devolved to all County hospital under the Managed Equipment Services scheme (MES) by the end of June 2016.The government aim was to decongest the National Referral Hospitals' dialysis units and to make the dialysis services easily accessible to all the citizens everywhere in the country. This study therefore aimed at determining the psychological stressors among the hemodialysis patients in the County dialysis centers.

Methodology
Study Design
This was a descriptive correlation study that described the psychological stressors among hemodialysis patients in four selected counties in Kenya. The researcher also intended to correlate the patients' demographic characteristics with hemodialysis psychological stressors.

Study Area and Population
The study was conducted in four selected new county hemodialysis centers in Kenya. The four county hemodialysis centers were selected by the researcher because they were all new level 5 county referral hospitals that were marked as the priority county public hospitals and equipped with hemodialysis equipment's through the Managed Equipment Service (MES) program of the Ministry of Health of Kenya, whose aim was to decongest the national referral hospital, the Kenyatta National Hospital (KNH). The study populations were all 101 hemodialysis patients in the selected four county hemodialysis centers.

Sampling Procedure
Sample size was achieved by use of census method where all the hemodialysis patients in the selected new hemodialysis centers were approached and invited to participate in the study.

Sample Size Determination
The researcher used Slovin formula to calculate the minimum number of participants that were required for the thresh-hold of this study. With a confidence interval of 95% and a margin error of 0.05, this formula gave a minimum number of 81 hemodialysis patients.

Inclusion Criteria
Included in the study were all the hemodialysis patients who had been on hemodialysis treatment modality in the same hemodialysis center for at least three months and who voluntarily consented to participate in the study.

Exclusion Criteria
Those who were excluded from the study were all hemodialysis patient who were unable to provide informed consent for the study, including those below the age of 18 years, those who were critically ill, and those who declined to consent for the study.

Data Collection Method
Data was collected using a self-administered questionnaire. The questionnaire consisted of both open-ended and closed-ended questions derived from the previously validated tools of Baldree et al., 1982 Hemodialysis Stressor Scale and Psychological Stress Tool.

Pre-Testing
The questionnaire was pretested with ten hemodialysis patients from a level 5 county hospital prior to data collection to test for the validity and reliability of the study tool. This was because, this hemodialysis center had similar characteristics to the four selected hemodialysis county centers in that and they were all new county hemodialysis centers.

Data Collection Process

The principle investigator led the data collection process assisted by two qualified nurses who were trained on what the tool intended to measure and how to administer the tool.

Data Analysis

Once all the questionnaires had been received, they were checked for completeness before being accepted for data entry and analysis. The entire incomplete questionnaires were not included in the study. SPSS version 25.0 was used in data analysis.

Descriptive data was analyzed using descriptive statistics (percentage, mean, median, mode, standard deviation) and graphical representations were used to highlight the significance from data. Pearson r correlation and chi-square were used to measure the degree of association between the variables.

Ethical Considerations

Ethical clearance was sought from Kenyatta University Research and Ethics Committee and NACOSTI for the main study. Participation of subjects was on a voluntary basis and written informed consent was obtained from all respondents prior to participation in the study.

All the relevant hospital authorities including the renal center ward in-charges were informed of the research and requested for permission for the research to proceed.

Study Findings

Demographic Characteristics of Respondents

On demographic characteristics, the study findings showed that, 40% (n= 36) of the respondents were aged 31-60years while 26.7%% (n=24) were aged below 30years. Majority of the respondents (61%, n= 55), were male while 71.1% (n= 64), were married. Almost half of the respondents, 48.9% (n= 44) had

primary school as the highest attained level of education while only one respondent had university level education.

On the sources of income, 60% (n = 54) of the respondents were peasant farmers with majority of the respondents, 77.8% (n = 70) earning below ksh.10,000 per month. Majority, 58.9 %(n= 53) of the respondents had dialyzed for a period of less than twelve months. This is shown in table 1.

Hemodialysis Stressors

The researcher evaluated the psychological hemodialysis stressors and the mean average was scored based on the Likert scale rating where; Disagree =1, Neutral = 2 and Agree = 3.

Psychological stressors

The findings showed that most of the respondents agreed that inadequate number of hemodialysis machines M= 2.94 (SD = 0.8), uncertainty about future life M= 2.74 (SD = 0.6), lack of hemodialysis equipment's' especially premapor M=2.69 (SD=0.7) were the top three psychological stressors. This was followed by difficulties in raising the cost of treatment to include raising transport to and from the hemodialysis centre 2.64 (SD 0.8) among others as shown in Table 2.

Association between Demographic Characteristics and Hemodialysis Stressors

Association between patient's demographic characteristics and psychological stressors was also conducted.

Association between demographics and psychological stressors

The analysis of psychological stressors and socio demographic factors as presented in figure 3 showed that, there was significant association (x^2(1) =5.613, p=0.016, p<0.05) between waiting for long for HD session and gender. Male respondents were more likely to be inpatient with delays in allocating them to HD machines.

Table 1: Respondent's socio-demographic characteristics.

Variable		Frequency (n)	Percentage (%)
Gender	Male	55	61.1
	Female	35	38.9
Age	≤30 Years	24	26.7
	31 - 60 Years	36	40.0
	>60 Years	30	33.3
Marital status	Single	17	18.9
	Married	64	71.1
	Separated/widowed	9	10.0
Education level	Primary level	44	48.9
	Secondary level	32	35.6
	Tertiary level	14	15.6
Monthly Income	≤ ksh.10,000	70	77.8
	Ksh.10,001 -20,000	9	10.0
	>ksh.20,000	11	12.2
Duration of Hemodialysis	≤12 Months	53	58.9
	13 -24 Months	17	18.9
	>24 Months	20	22.2

Table 2: Psychological stressors respondents rating.

	Disagree	Neutral	Agree	Mean ± SD
There are inadequate number of HD machines	2 (2.2%)	1 (1.1%)	87 (96.7%)	2.94 ± 0.8
Am not sure about future	10 (11.1%)	3 (3.3%)	77 (85.6%)	2.74 ± 0.6
We lack HD equipment's	14 (15.6%)	0.0	76 (84.4%)	2.69 ± 0.7
Difficulties in raising costs of treatment	16 (17.8%)	0.0	74 (82.2%)	2.64 ± 0.8
HD Machines keep breaking down	19 (21.1%)	0.0	71 (78.9%)	2.58 ± 0.8
Wait for long to for HD machine	40 (44.4%)	0.0	50 (55.6%)	2.11 ± 1
Depend on others to get to clinic	70 (77.8%)	0.0	206 (22.2%)	1.44 ± 0.8
HD machines are never repaired in time	78 (86.7%)	4 (4.4%)	8 (8.9%)	1.22 ± 0.6

Table 3: Association between demographics and psychological stressors.

Socio-demographic factors								
Psychological factors			Age	Gender	Marital status	Education level	Source of income	Monthly income
Wait for long to be allocated HD machine	df	2	**1**	2	2	2	2	
	X^2	0.034	**5.613**	2.317	0.474	2.616	0.337	
	P-value	0.983	**0.016**	0.314	0.789	0.27	0.845	
Depend on others to get to clinic	df	2	1	**2**	2	2	2	
	X^2	4.821	0.164	**6.438**	1.383	2.56	1.270	
	P-value	0.091	0.447	**0.04**	0.501	0.278	0.530	
Not sure about the future	df	4	2	4	4	4	4	
	X^2	8.036	1.975	2.957	3.886	6.69	2.662	
	P-value	0.09	0.372	0.57	0.422	0.153	0.616	
Difficulties in raising hospital costs	df	2	1	2	2	2	2	
	X^2	0.152	0.016	2.277	0.589	0.878	9.185	
	P-value	0.927	0.568	0.328	0.745	0.638	0.01	
Inadequate HD machines	df	4	2	4	4	4	4	
	X^2	3.453	1.975	1.778	9.153	6.375	0.857	
	P-value	0.485	0.373	0.778	0.057	0.173	0.926	
HD machines keep breaking down	df	2	1	2	2	2	2	
	X^2	2.052	3.661	2.102	1.473	0.589	0.916	
	P-value	0.359	0.051	0.350	0.479	0.745	0.633	
HD machines are never repaired in time	df	4	2	4	4	4	4	
	X^2	0.686	2.297	5.785	3.926	1.614	3.120	
	P-value	0.953	0.317	0.216	0.416	0.806	0.538	
Never lack HD equipments	df	2	1	2	2	2	2	
	X^2	0.233	0.743	0.451	1.205	2.014	1.371	
	P-value	0.89	0.291	0.798	0.547	0.365	0.504	
Never lack erythropoietin injection pharmacy	df	**4**	2	4	4	4	4	
	X^2	**8.693**	3.218	4.842	3.316	5.091	5.227	
	P-value	**0.042**	0.146	0.304	0.506	0.278	0.265	

Depending on others to get to the clinic was significantly associated $x^2(2)$ =6.44, p=0.04, $p<0.05$) with marital status. Married respondents were less likely to be stressed by depending on others as a stressor as their spouses were voluntary willing to bring them to the HD center. Lack of erythropoietin injection $x^2(4)$ =8.693, p=0.042, $p<0.05$) from pharmacy was associated with age of the respondents. Older respondents were more likely to regard lack of erythropoietin as a stressor.

Discussion

The study findings demonstrated that majority of the hemodialysis patients in the new county HD centers40% (n=36) were aged between 31-60years while only 26.7 %(n=24) of them were aged below 30years of age.

These findings disagree with other studies which found CDK to be higher in patients above 60 years [11].The findings indicate that CKD is also becoming more prevalent locally among the younger population.

Majority of the hemodialysis patients in the current study were male who accounted for 61% of the total number of respondents. These findings are consistent with those of a study in south Sudan by [12].

These is so because majority of the women attend routine screening and therefore the predisposing risk factors are identified as early as possible and managed much early but men hardly do they attend early screening services and only report to health facility when the problem has already developed. However, these findings are inconsistent with [11], as he reported higher rates of CKD in women.

On economic status, the current study found out that majority of the respondents 54 (60%) were farmers with majority of them been

educated up to primary school level 48.9% and earned a monthly income of less than ksh.10,000. This was so because the study was based in a rural setting where majority are usually peasant farmers.

Despite the Government initiative to devolve HD services, the findings of this study showed that an inadequate hemodialysis machine remains a major psychological stressor among HD patients. These findings are consistent with previous studies. According to James Ndambuki (2013), inadequate hemodialysis machine was one of the factors leading to dissatisfaction with nursing services among hemodialysis patients [13]. Therefore a conclusion can be drawn that the prevalence of the patient requiring hemodialysis services is on the rise.

Difficulties in raising the cost of treatment, waiting for long before being allocated hemodialysis machine and some delays in the repair of hemodialysis machines when they break were also major psychological stressors reported. This is consistent with previous studies. According to [14] unavailability of hemodialysis machines and high cost of treatment is the major challenge among hemodialysis patients. The findings point out that despite devolving dialysis services, the Government needs to re-strategize again to address the increasing need of hemodialysis services.

Inadequate hemodialysis machines in the county dialysis centers despite the government initiative to equip county level 5 dialysis centers indicated that CKD is becoming more prevalent locally. According to Soje (2014) black race is at a higher risk of progressing from ckd to esrd and that this should call for more active interventions to reduce the increasing incidences and prevalence of CKD among black population as it is higher than in the whites' population.

Respondent's gender was significantly associated with waiting for so long to be allocated a hemodialysis machine with a p <0.05. Male respondents were likely to be bothered by having to wait for so long to be allocated a dialysis machine more than female respondents. This is consistent with previous studies. According to [15] male patients relate their suffering to loss of freedom.

Marital status was significantly associated with depending on others to get to the dialysis center with a p value of 0.04.Married respondents were less likely to be bothered by depending on others to bring them to the dialysis center than the single respondents. This is consistent with previous studies. According to [16], married HD patients experience social support from significant others and their families compared to single patients.

Conclusion
The major psychological stressors were inadequate hemodialysis machines, life uncertainties, lack of hemodialysis commodities and difficulties in raising the cost of treatment, breakage of machines, long waiting time, dependency and failure to repair machines when they break down. There was significant statistical association between long waiting time and patients' gender, dependency and marital status.

Recommendations
The study recommends the County government to increase the number of HD machines in line with the number of patients so that to reduce on waiting time. The county government should also increase the accessibility of hemodialysis machine to all the county level 4 hospitals in order to reduce the cost of transportation for the patients. The hospital management should ensure that the broken down machines are repaired in time and also the working machines should be serviced well in advance to prevent them from breaking down.

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