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Factors Associated with Elevated Depression in Family Caregivers of End Stage Kidney Disease in Nairobi County, Kenya

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Abstract

Following a diagnosis of kidney failure, known as End Stage Kidney Disease (ESKD), the patient is normally required to undergo dialysis to sustain life. For most patients, the family is the most affected as it has to cope with changes in medication, diet and dialysis. Usually, one or two members of the family become primarily responsible for taking care of the patient and are referred to as the family caregivers (FCGs). Studies have shown that this population has an onerous caregiving burden with the patient requiring much care due to the unique demands of ESKD which may lead to psychological difficulties, including depression. However, little research has been done regarding the development of depression in this population, yet ESKD is considered a family matter. There is therefore, the need to consider the incidence of and factors associated with depression among FCGs of patients with ESKD. In a cross-sectional study, using a convenience sample of 96 FCGs and their patients in various hospitals in Nairobi and the Beck's Depression Inventory (BDI) tool, this study found that 33.3% of the sample, with a mean depression score of 18.9 (± 6.5 SD) had mild depression. There was no significant association between most socio-demographic and socio-behavioural characteristics of the patients and FCGs and FCG depression that were measured. These variables included substance abuse, age, duration of care for patient and educational level of FCGs and patients. However, gender was found to be significantly associated with depression among the FCGs. Additionally, those not residing with the patients had a significantly high level of depression than those residing with the patients. These findings are significant for clinical practice for the multi-disciplinary team involved in ESKD that includes the medical and psychological practitioners.
Key Words: End stage kidney disease, family caregivers, depression

Introduction and background

It has been established that giving care to a chronically ill family member can have negative effects on the caregivers' life (Feinberg, Reinherd, Houser, & Choula, 2011). In particular, it has been established that FCGs of patients with renal disease undergo serious stresses due to their role, which could result in the development of mental disorders among this population (Auer, 2002; Belassco & Sesso, 2002; Belasco, Barbosa, Bettencourt, Diccini, & Sesso, 2006). Reviewing 30 years of general caregiving literature, Feinberg et al. (2011) found that caregiving can negatively impact the finances, retirement, career, physical and emotional health, and social networks of FCGs. If the patient with renal disease has a comorbidity of mental and physical disorders, the impact can become particularly severe on

the FCGs. Consequently, FCGs can present with difficulties such as depression and anxiety-related symptoms.

Caregiving literature refers to FCGs as the “hidden patients” (Kristjanson, 2004) or as "secondary patients" (Reinherd, Given, Petlick, & Bremis, 2008). Like any other terminal illness, from diagnosis to the process of treatment of ESKD, the family experiences financial and lifestyle changes. It is also the family that withstands the worst of the illness as it seeks to facilitate, accommodate and effect requisite changes (Auer, 2002). Certainly, most of the patient's life is spent at home under the care of (most probably) a family member who is unpaid for the diverse roles he or she plays. These roles are burdensome and have traditionally not been addressed during the course of the patient's treatment.

Accordingly, FCGs can be identified as the individuals who during the course of treatment are most closely involved in caring for the patients and helping them cope with and manage their chronic illness. Auer (2002) pointed out that the renal medical team takes great care of the patient after diagnosis. However, this is not true for the caregivers whom the medical team lends little support, psychologically or otherwise. The support to FCGs is crucial because, as mentioned before, there are complex medical tasks that they undertake. In addition, they often feel unprepared to provide care, have inadequate knowledge to deliver proper care, and receive little guidance from the formal health care providers (Scherbring, 2002).

Due to their inadequate knowledge and skill in medical procedures, FCGs may be unfamiliar with the type of care they must provide or the amount of care needed. For instance, they are tasked with observing their patients for early signs of problems such as medication side effects, and high or low blood pressure. These are serious responsibilities and FCGs are often unable to interpret their patients’ symptoms, including the ability to discern emergency situations. With the scanty help from health care professionals in managing these tasks and the emotional demands of caregiving, the FCGs often neglect their own health care needs, which may cause deterioration in their health and well-being (Gayomali, 2008). This is one factor that could lead to depression among them (Ndanyi, 2013). This study therefore, aimed at establishing the specific factors that led to depression among the FCGs. It was hoped that this would create awareness among the kidney medical fraternity to know that they have secondary patients who are the FCGs. This would assist them in referring FCGs to psychologists for assessment and treatment. The study would also equip psychologists with awareness that as they handle family members of ESKD patients there may be presence of depression.

Methodology

This study was a cross-sectional design, which was an observational approach where the study environment was not manipulated (Mugenda, 2013) aiming at establishing the factors that were associated with incidence and severity of depression among FCGs of ESKD.

Study participants were enrolled from four dialysis units, all in the private sector in the Nairobi County. Following the baseline recruitment, a total of 96 participants were enrolled in the study using convenience sampling. Only family members of the patients who had mild and moderate depression were included.

Selection of the sample in this study was challenging in that there was no sampling frame from which to calculate sample size. The only indication of the numbers of the population of FCGs was that they were pegged to the available patients. The formula that was used to calculate the minimum required sample size was the Lameshow model (Lameshow, Hosmer, Klar, & Lwanga, 1990). Difference in points of recruitment did not confound the results because the unit of analysis was the family caregiver (FCG) accompanying the dialysis patient. Due to scarcity of the number of FCGs accompanying their dialysis patients, all consenting FCGs were consequently enrolled into the study until the sample size was attained.

Most of the caregivers were female (56.5%) with slightly over 50% of them being married. The mean age among the FCGs was 42.7 $\pm$ (13.4 SD) ranging between 18 and 74 years. The mean age of female FCGs was high (44.8 $\pm$ (11.3 SD)), though not significantly different compared to the mean age of their male counterparts (39.9 $\pm$ (15.3 SD), (p=0.072).

A researcher-generated questionnaire capturing the sociodemographic data of the FCGs and patients was used. The data included age, gender, marital status, cost of dialysis per week, who paid for dialysis, challenges with costs of treatment, educational level, religion, and occupation of the FCGs and patients .

The Hospital Anxiety and Depression Scale was used. This is a 14-item tool used to screen participants; those who scored 8 and above were included in the study. The Beck's Depression Inventory (BDI) was used to measure depression. For over 35 years, this instrument has been used to measure depression all over the world (Farinde, 2013; Saeed et al., 2012; Wang & Gaonstein, 2013). It is used to identify and assess depressive symptoms and their severity, and has been reported to be highly reliable regardless of the population (Beck, Epstein, Steer, & Brown, 2014). This means that it was relevant for the Kenyan participants in this study. Its psychometric properties have been found to be acceptable due to its internal consistency, which ranges from .73 to .92 with a mean of .86 and the internal consistency, with alpha coefficients of .86 and .81 for psychiatric and non-psychiatric populations, respectively (APA, 2014). Scores from 0 to 9 represent minimal depressive symptoms, scores of 10 to 16 indicate mild depression, scores of 17 to 29 indicate moderate depression, and scores of 30 to 63 indicate severe depression. This study excluded those with minimal and severe depression.

In Kenya, the BDI has been widely used in research and has been found to have sound psychometric properties (Muriungi & Ndetei, 2013). Its Swahili version was used in a study to determine the risk of depression in caregivers of children with intellectual disability at the Gachie Catholic Parish, Archdiocese of Nairobi by Mbugua, Kuria, and Ndetei in 2011.

Exploratory data analysis (EDA) techniques were used at the initial stage of analysis to uncover the structure of data and identify outlier or out of range values. Descriptive statistics such as mean, standard deviation (SD), 95% confidence interval of mean, minimum and maximum were used to summarize continuous variables while categorical variables were summarized using frequencies and proportions. T-test and one way analysis of variance (ANOVA) were used to test for mean differences in Beck Depression Inventory (BDI) scores between two and more than two independent groups, respectively. Multiple linear regression analysis was used to model BDI scores using independent factors identified to be significant

at $p<0.1$ during bivariate analysis. Backward conditional method was specified with removal at $p<0.05$, resulting in identification of independent predictors of elevated BDI scores.

Results

The socio-demographic characteristics of the participants showed that the proportion of women was relatively higher (56.3%) than the men (43.8%). There was a high number of participants aged 36-55 years (49.0%). Most of the participants were married (51.0%) while 33.3% were single. A relatively high proportion (68.8%) had attained tertiary education while 78.1% were Christians. Most of the participants (68.8%) reported that they resided with the patients, while a relatively high proportion (66.7%) indicated that the patients they were taking care of had been on treatment for at least 1 year. In addition, a majority of the participants were engaged in informal employment (71.9%).

Table 1 presents other epidemiological characteristics of the participants. A relatively small proportion of the participants (11.5%) were smoking cigarettes while 28.1% were taking alcohol. Approximately one-third of the participants (34.4%) had a history of mental illness in the family and 56.3% reported that they were suffering from other illnesses. The majority (96.9%) reported experiencing stress from caregiving, which was hardly surprising given the arduous responsibilities imposed by ESKD.

Table 1: Other Epidemiological characteristics of the FCGs

Variables	n=96	%
Smoking	11	11.5%
Alcohol use	27	28.1%
History of mental illness in the family	33	34.4%
Suffers from other health conditions/ illnesses	54	56.3%
Experiences stress from care-giving	93	96.9%

Table 2 presents the distribution of Beck Depression Inventory (BDI). Analysis of the BDI score revealed that overall, mean BDI score was 18.7 ($\pm$ 6.5 SD) ranging between 3 and 32. This indicated that the FCGs had elevated depression, which necessitated the study as to the factors in their caregiving that may have led to this situation.

Table 2: Distribution BDI scores

				95% CI				
Variables	n	Mean	SD	Lower	Upper	Median	Min.	Max.
Beck Depression Inventory (BDI)	96	18.7	6.5	17.4	20.1	19.0	3	32

What follows presents factors associated with elevated BDI scores among the FCGs.

a. BDI score in relation to socio-demographic characteristics

Table 3 presents the mean standard deviation and range of the BDI score by different socio-demographic characteristics of the participants. Gender was significantly associated with the mean BDI score. Female participants had significantly high mean BDI score (20.1 (± 6.1 SD)), compared to their male counterparts (16.1 (± 6.1 SD); $p<0.001$). Accordingly, female FCGs were more at risk to being depressed than the males. Residence had a marginally significant association with the BDI score. Participants who did not reside with FCGs had high mean BDI score (20.6 (± 17.9 SD)), compared to those residing with FCGs (17.9 (± 17.9 SD); $p=0.053$). This implied that those FCGs who lived away from the patients were more predisposed to depression than those who lived with the patients. According to this Table, none of the other socio-demographic characteristics were significantly associated with an elevated BDI score among the FCGs.

Table 3: Beck Depression Inventory (BDI) score in relation to socio-demographic characteristics of the participants

				95% CI			
Variables	N	Mean	SD	Lower	Upper	Min.	Max.
Gender							
Male	41	16.1	6.1	14.1	18.0	3	30
Female	54	20.8	6.1	19.1	22.4	6	32
p value		<0.001					
Age in years							
<36 years	29	18.2	7.0	15.5	20.9	5	30
36 - 55 years	47	19.0	6.7	17.0	21.0	3	32
>55 years	20	18.9	5.2	16.5	21.3	6	29
p value		0.870					
Marital status							
Married	49	18.0	6.0	16.3	19.8	6	31
Single	32	19.6	7.0	17.1	22.1	5	32
Divorced/ Separated/ Co-habiting/ Widowed	15	19.2	7.1	15.3	23.1	3	29
p value		0.553					
Education level							
Secondary and below	30	18.2	5.7	16.1	20.4	6	31
Tertiary	66	19.0	6.8	17.3	20.7	3	32
p value		0.608					
Religion							
Christianity	75	18.8	6.5	17.3	20.3	5	32
Other	21	18.6	6.5	15.6	21.5	3	29
p value		0.894					
Resides with patient							
No	30	20.6	7.4	17.9	23.4	3	32
Yes	66	17.9	5.9	16.4	19.3	5	31
p value		0.053					
Duration of treatment							
<1 year	32	18.0	5.9	15.8	20.1	6	29
1 year and above	64	19.1	6.7	17.4	20.8	3	32
p value		0.412					
Other work done apart from taking care of the patient							
Employed	27	19.0	7.0	16.2	21.8	3	30
Business	35	18.9	6.6	16.6	21.2	6	32
Others	34	18.4	6.0	16.3	20.5	5	31
p value		0.922					

b. BDI score in relation to socio-behavioural characteristics of the participants

Table 4 presents the mean, standard deviation and range of BDI score in relations to socio-behavioural characteristics of the participants. As the table shows, none of the socio-behavioural characteristics of the participants was significantly associated with BDI score ($p>0.05$). This shows that neither smoking nor taking alcohol was linked to elevated depression among the FCGs.

Table 4: Beck Depression Inventory (BDI) score in relation to socio-behavioural characteristics of the participants

				95% CI			
Variables	N	Mean	SD	Lower	Upper	Min.	Max.
Smoking							
No	85	18.8	6.5	17.3	20.2	3	32
Yes	11	18.6	6.2	14.4	22.8	11	29
p value		0.956					
Alcohol use							
No	69	18.9	6.9	17.3	20.6	3	32
Yes	27	18.3	5.4	16.1	20.4	11	28
p value		0.652					

c. BDI score in relation to other health issues and specific psychosocial characteristics

Analysis of the BDI score in relation to other epidemiological characteristics among the participants was done as presented in Table 5. The results indicated that none of the other epidemiological characteristics of the participants was significantly associated with BDI score ($p>0.05$).

Table 5: Beck Depression Inventory (BDI) score in relation other epidemiological characteristics among the participants

				95% CI			
Variables	n	Mean	SD	Lower	Upper	Min.	Max.
History of mental illness in the family							
No	63	18.0	6.5	16.4	19.6	3	32
Yes	33	20.2	6.3	17.9	22.4	6	30
p value		0.115					
Suffers from health conditions/ Illnesses							
Yes	54	18.4	5.8	16.8	19.9	3	30
No	42	19.2	7.3	16.9	21.5	5	32
p value		0.529					
Experiences stress from the care-giving							
No	3	20.0	8.2	0.0	40.3	13	29
Yes	93	18.7	6.5	17.4	20.0	3	32
p value		0.734					

d. Factors associated with elevated BDI scores among the study participants (Multiple regression analysis)

Linear regression was used to model BDI scores using factors identified to be significant at $P<0.1$ during bivariate analysis. Backward conditional method was specified with removal at $P<0.05$. Two independent predictors of elevated BDI scores among participants were identified.

Female gender was identified to be significantly associated with elevated BDI scores among the FCG ($p<0.001$). The indication here was that female caregivers of whichever age or occupation were predisposed to elevated depression. The same was found for FCGs not residing with the patients ($p=0.041$).

Table 6: Factors associated with elevated BDI scores

		95% CI			
Variables	B	Lower	Upper	T	p value
(Constant)	15.28	13.27	17.28	15.16	<0.001
Gender: Female	4.64	2.20	7.08	3.78	<0.001
Resides with patient: No	2.73	0.11	5.34	2.07	0.041

These results indicated that of all the socio-demographics and epidemiological characteristics of the FCGs measured; only gender and not residing with the patient were significantly associated with a high level of depression among them.

Discussion

This study aimed at establishing whether FCGs of ESKD patients suffered from depression and if so, were there factors that could have led to that state of affairs? The results revealed that the overall mean BDI score in this study was 18.7 (± 6.5 SD) ranging between 3 and 32. This indicated that the mean level of severity was mild depression. However, it is noteworthy that the majority of the sample, being females, had a moderate level of depression, a mean BDI rate of (20.1 (± 6.1 SD)). This finding agrees with Avscar et al. (2015) that FCGs of dialysis patients had moderate depression in contrast to their counterparts caring for transplant patients who were no longer on dialysis. Further, this study also found that 33% of the FCGs fell in the category of moderate depression. This is comparable to the studies that have found that 33.4% and 34.0% of FCGs in Saudi Arabia have moderate to severe depression, respectively (Elmadi et al., 2011; Saeed et al., 2012).

It has been said that the role of caregiving for patients with chronic illnesses exert similar pressure to that experienced by having patients admitted in hospital (Al-Zahrani et al., 2015). This suggests that with the frequent admissions of dialysis patients, the severity of depression and anxiety could escalate. Al-Zaharani et al. had a sample of 357 caregivers of hospitalized patients out of which 72.8% were found to have mild depression and 58.8% to have severe depression. That study found more serious levels of depression than the current study probably because it studied caregivers of hospitalized patients with chronic illness compared to this study that studied FCGs of outpatients. However, like the current study, it shows the potential for high levels of depression among caregivers.

The caregiving burden among FCGs was manifested in that nearly all the sampled participants (96.9%) reported they suffered stress. This is a frequent finding in earlier studies (Alnazy & Samara, 2014; Bayoumi et al., 2013; Elmahdi et al., 2011), suggesting that stress is a concomittant of FCGs. In the ESKD context, the diagnosis, medication, adherence to medication and a highly restrictive renal diet are complicated by the fact that caregiving is largely by untrained persons in patient care, which puts the caregivers under a heavy burden and stress (Shcherbring, 2002). A study by Cameron et al. (2012) found that stress could be caused by lifestyle changes brought about by caregiving. Cameron et al. surmised that the disruption of the FCG's normal life and abandonment of their valued activities to cater for the

patients was a major lifestyle change. Unprecedented and involuntary changes of this nature were significantly associated with emotional distress, which makes depression a likely result of the caregiving burden.

In addition, caregivers are faced with feelings of dismay, disbelief and fatigue that result from all the activities of dialysis, which include transportation to and from dialysis, administering medications and adherence to a renal diet, among other responsibilities. Indeed, attending dialysis twice or thrice a week has been found to influence the FCGs leading to psychological distress (Avsar et al., 2015. The result would be loss of their independence whereby, as noted by Bayoumi et al. (2006), the dreams and plans FCGs are shelved, or in the worst scenario case, shattered. Moreover, FCGs in caring for the patients tend to neglect their own health, reduce their social activities leading to loneliness and isolation, and suffer negative economic consequences, all of which can result in depressive symptoms or getting full-blown depression (Arechabala, Catoni, Palma, & Barrios, 2011). In addition, most FCGs live with the reality that dialysis is not a cure for ESKD, and kidney transplantation is not available to many due to the prohibitive cost and lack of donors. On top of that, the risk of the patients' death is always a gruel reality to FCGs, suggesting that loss and feelings of grief may dominate their emotions. This may also be responsible for their high level of depression.

Two socio-demographic factors were significantly associated with BDI scores. These were gender and residence with patients. In terms of gender, female participants had significantly high mean score (20.1 (+ 6.1 SD)), compared to their male counterparts (16.1 (+ 6.1 SD); $p<0.001$). This finding is supported by the APA (2016) which stated that women are approximately two times more likely than men to suffer from major depression and persistent depressive disorder. This is deemed to be the most significant mental health risk for this gender. Despite this strong evidence for female predominance, Saeed et al. (2012) did not find it significantly associated with depression in their FCGs. The reasons for the female preponderance in depression appear to have been variously studied. A North Korean study confirmed that the female gender had a higher rate of depression in that country. This is similar to this study that confirmed gender disparity in the two disorders.

According to WHO (2016), it has been accepted that more females than males suffer from depression and anxiety worldwide. WHO attributed this to a combination of factors that range from pressures of their multiple roles, gender discrimination and concurrent issues of poverty, hunger, malnutrition, overwork, domestic violence and sexual abuse. Indeed severe life events that cause a sense of loss like having an ESKD patient can predict depression.

The WHO also noted that patients attending healthcare facilities in developing countries suffer from anxiety and depressive disorders. In most centres, these patients are not recognized and therefore not treated. Most of these mental disorders are in women of course, yet, communication between health workers and women patients is autocratic. This makes it extremely difficult for women to disclose their psychological and emotional distress. For FCGs, this may smack of guilt over taking care of loved ones, resulting in demotivation (Ryan & Deci, 2000). According to WHO, it is a reality that when women dare to disclose their problems, many health workers tend to have gender biases, which could mean either over-treating or under-treating women. This view of the WHO is true of Kenya as a

developing nation. There is therefore, a need for health professionals to address this gender uniqueness in assessment and treatment of women.

Gender disparity may arise due to the fact that males are known not to seek help as women do. Studies done in the last few decades have shown a universality of men being less likely to seek help for all manner of problems, including mental health problems (Winerman, 2005). Instead, they seem to deal with their problems through externalising behaviours such as substance use, irritability and social withdrawal. This is despite the fact that they encounter those problems at the same or greater rates than their female counterparts do. Kessy's (1993) study that showed that of all out-patient mental health patients, two-thirds were women. Some of the reasons advanced for this include the fact that men are not socialised to admit weakness and seeking help may mean evidence of defeat (Addis & Mahalik, 2003).

Residence had a marginally significant association with BDI. FCGs who did not reside with the patients had a high mean BDI score (20.6 (+ 17.9 SD)), compared to those residing with the patients (17.9 (+ 17.9 SD); p=0.053). This was an interesting finding as it had been a reasonable expectation that being with the patients round the clock would induce higher psychopathology than being absent. However, feelings of guilt for not meeting patients' needs and worry about what could be happening to the patients have been known to lead to depression in non-resident FCGs; so too were disruption of FCG routine, and significant relationships and financial and time implications for travel to care for the patients (North Dakota State University, 2003). It can also be conjectured that for non-resident FCGs, having to rely only on reports of the patients' progress from resident FCGs was likely to raise their depression status.

Being a non-resident caregiver has implications of cost of travel in terms of time and money. These factors are dire in the Kenyan context and deserve more than a mere mention. According to AARP, an American interest group that has done considerable research on caregiving, living away from the patients has a serious cash implication with non-resident FCGs spending more money on transport (AARP, 2012). In the developed world, this has been solved by FCGs living near their patients. One study found that FCGs who lived 20 minutes away from the patients had better mental health outcomes as well as making major savings in transport costs (Family Caregiver Alliance, 2012). Clearly, it is advantageous to live near the patients even in financial terms. The question is, what would this translate to in low income countries like Kenya? This is because there are serious infrastructural challenges facing the country, with research showing that there has been an annual loss of Kshs. 1.9 billion since 2008 as a result of time spent on travel due to traffic congestion (Gachanja, 2015).

The psychological impact of this colossal loss is yet to be measured, but it can be reasonably hypothesized that financial loss is at least partly responsible for the significant association of mental disorders among FCGs in this study. This may be compounded by the additional time required for travel to the patients and the helplessness that arises from the inability to reach the patients as may be desired. Gachanja (2015) indicated that traffic congestion in the Nairobi County may not be fully eradicated as it is no longer financially and

socially viable. This reality has deeper implications for FCGs not living with their patients in this County.

This finding on non-resident FCGs may also be understood from an operant conditioning perspective. According to this theory, behaviour results when an individual's behaviour is either positively or negatively reinforced (Powell et al., 2009). In the case of FCGs, in-house caregivers may be positively reinforced when their efforts are constantly rewarded with the patients' needs being met and the relative relief that meeting these needs produces. Also, the patients' response to treatment may be another form of a positive reinforcer. The resident FCGs are therefore, conditioned by positive reinforcement not to feel as depressed as the non-resident FCGs. Accordingly, the resident FCGs may be in a better position. By contrast, the non-resident FCGs who are absent from the patients may have a feeling of guilt and uncertainty as well as shock because of the patients continuous decline. These feelings are negative reinforcers, which might result in the non-resident FCGs having higher levels of depression among other mental disorders.

That no other socio-demographic characteristics of the FCGs were significantly associated with their elevated BDI scores in the current study contrasts with the findings of other past studies. For instance, being married has been significantly correlated with depression (Pruncho et al., 2009; Saeed et al., 2012). Likewise, socio-economic status in terms of low income was significantly negatively associated with depression (Saeed, 2012). According to Rai et al. (2011), taking care of patients on dialysis for more than a year was positively associated with depressive symptoms. In the current study, although 67% of the FCGs had taken care of the patients for more than a year, there was no significant association with depression.

In this study, the following limitations were noted. The study was conducted with a small sample because it was limited to the private sector. ESKD is a very expensive disease for which only a few can afford to use private sector facilities. Dialysis units are also small and few in that they cater for a small number of patients. Private hospitals tend to be protective of their clients and are sensitive to any form of investigations being carried out in their domain, hence, the small sample size.

A small sample size also implies that the generalizability of the study results is limited. Nevertheless, the statistical methods used to calculate a scientifically acceptable number ensured that the results were meaningful. Also, small sample sizes are a usual occurrence in psychology research (Gurgan, 2013; Marszalek, Barber, & Kohlhart, 2011) and particularly in depression studies (Mohabat-Bah on, Meleki-Rizi, Akbari, & Moradi-Joo, 2015).

Secondly, the study was done in the private sector in Nairobi County. However, this did not compromise the validity and reliability of the study.

Thirdly, stress, income level and substance use by FCGs were not measured using the appropriate psychological tools. The data obtained for these variables was through self-reporting by the participants. If done, the study may have provided more detailed information on the associations between these variables. However, these issues can be the subjects of future studies.

Conclusion

This study sought to find out the severity levels of depression among FCGs of ESKD patients and factors associated with them. The study has undoubtedly demonstrated that due to the burdened, stressed and complicated lifestyles lived by FCGs of ESKD patients, they exhibit mild to moderate depression. Being female and not residing with the patients were found to be significantly associated with this level of depression. Compared to males, females had complex biological, socio-economic and cultural status in life that seemed to predispose them to mental illness unlike their male counterparts who are not. This may explain the gender prominence in the mental disorders covered by this study.

The study suggests that nephrologists and other medical personnel taking care of kidney patients need to focus on the well-being of FCGs. This is because FCGs spend more time taking care of the ESKDs. In addition, it is recommended that they refer the FCGs for psychological testing in order to deal with any depressive symptoms that may impede their effectiveness as FCGs. Psychotherapists handling clients in the renal arena need to be aware of the presence and severity levels of depression among FCGs of the patients as this would lead them to accurate diagnosis and application of appropriate therapy.

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