Original Article

Anxiety and Depression among Hemodialysis Patient in a Tertiary Care Center Kathmandu, Nepal

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ABSTRACT

Background: Anxiety and Depression is a common yet frequently overlooked psychiatric symptom in patient with End Stage Renal Disease (ESRD) treated with hemodialysis. The objective of the current study was to identify the proportion of anxiety or depression among patient undergoing hemodialysis in a tertiary care center.

Methodology: A descriptive cross-sectional study design was adopted with sample size of 147. Consecutive sampling technique was used to select the sample. A semi-structured questionnaire and Hospital Anxiety and Depression scale was used. Collected data were analyzed by using both descriptive as well as inferential statistics.

Result: We found 37% of the patients as having anxiety and 38% having depression, with 21% of co-morbidity. We found higher odds of anxiety among certain groups: female [adjusted odds ratio (aOR)-1.99, 95% CI: 0.78-5.09], respondents of 65 years and above age group (aOR-5.04, 95% CI: 1.24-20.55). The unemployed respondents had higher odds (aOR-3.54, 95% CI: 1.38-9.08) of co-morbid anxiety and depression. Also, those respondents who required hemodialysis twice to thrice a week had higher odds (aOR-6.79, 95% CI: 1.20-38.42).

Conclusion: A substantial proportion of chronic kidney disease patients were having anxiety and depression and that this occurred more frequently among those undergoing dialysis. Likewise, female respondents, respondents of 65 years and above age group and unemployed respondents had higher odds of co-morbid anxiety and depression. So, effective and timely treatment of affective disorders and additional management of these associated comorbidities could enhance the quality of life of hemodialysis patient.

Keywords: Anxiety, Depression, Hemodialysis, Hospital Anxiety and Depression Scale

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INTRODUCTION

Chronic kidney disease (CKD) is a condition that encompasses all degrees of decreased kidney function, from damaged at risk through mild, moderate, and severe chronic kidney failure[1]. Hemodialysis is a treatment for end stage kidney disease that removes the extra water and waste products from our blood[2].Worldwide it is estimated that 2 million people suffer from kidney failure, and the number of patients diagnosed with the disease continues to increase at a rate of 5-7% per year[3]. Anxiety and Depression are a common yet frequently overlooked psychiatric symptom in patients with End Stage Renal Disease (ESRD) treated with hemodialysis (HD) [4]. Anxiety and Depressive symptoms are among the most frequently occurring co-morbidity among patients with CKD and undergoing hemodialysis. Early identification and diagnosis of anxiety and depression is often missed, owing to the similarities between depressive symptoms and uremic symptoms.

Therefore, this might explain the lower prevalence of depressive disorder in the early stages of CKD[5]. Patients with ESRD experienced the psychiatric burden which may have profound effects on their quality of life and response to treatment. Patients often develop depressive or anxiety disorders in response to stresses, and of course, they may develop ESRD with underlying psychiatric illnesses that may not be directly related to kidney disease or kidney failure[6]. Evidence around common mental illnesses such as anxiety and depression is scarce even among general population as well as people with chronic illnesses in the country context. We thus aimed at exploring the proportion of hemodialysis patients suffering from anxiety and depression and its associated factors at a tertiary care hospital in Kathmandu, Nepal. This is expected to add knowledge to the existing condition to underscore the burden of common mental illnesses among the people living with chronic illness and would guide for comprehensive management of people with chronic illness.

MATERIAL AND METHODS

A hospital based cross sectional study was carried out in National Kidney Center, Kathmandu among 147 patients undergoing hemodialysis enrolled through sequential sampling. Ethical approval from Institutional Ethical Review Committee of Nepalese Army Institute of Health Sciences as well as permission from the administration of National Kidney Center and written informed consent from each study participant was obtained.

We enrolled consecutive patients meeting, those patients of age 18 years and above on maintenance hemodialysis for at least 6 months, in the study. We interviewed patients visiting the hemodialysis ward of the hospital through a face-to-face interview using semi structured questionnaire from March to April 2020. We used Hospital Anxiety and Depression scale (HADS) to assess anxiety and depression which contains 14 items in two subscales: anxiety (HADS-A) and depression (HADS-D), each with seven items (A1 to A7; D1 to D7)9. The Nepalese version of HADS validated in one of the tertiary care hospitals in Nepal was used. The internal consistency of the two scales is good. Concerning the depression scale, Cronbach's alpha is .78 and the scale/item correlations vary from .54 (HAD8-D4) to .77 (HAD12-D6). Concerning the anxiety scale, Cronbach's alpha is .81 and the scale/item correlations vary from .56

(HAD7-A4 and HAD11-A6) to .78 (HAD5-A3). HADS rates each item on a four-point scale from 0-3 where 3 indicates maximum symptom severity and when the scores are summed the possible scores ranged from 0 to 21 for each of the subscale – anxiety and depression. A score of ≥11 out of the summed score of each of the subscale – HADS-A and HADS-D indicates case-ness and is the definition of anxiety and depression which we have used in this study.

We entered the data using EpiData Version 3.1, cleaned & managed it in SPSS 24.0, and analysed it using STATA SE 14.. STATA is a general-purpose statistical software package developed by StataCorp for data manipulation, visualization, statistics and automated reporting. We present the descriptive results as proportions with 95% CI and inferential statistics as adjusted odds ratio (aOR) through multivariate logistic regression. The variables used for adjustment in the regression analysis were sex, age, education, marital status, occupation, and duration of maintenance dialysis, frequency of maintenance dialysis and presence of comorbid condition. We first carried out binary logistic regression with a single covariate for both dependent variables (anxiety and depression), followed by multivariate logistic regression to determine the associated factors for anxiety and depression. Independent variables having an association with the dependent variable in univariate binary logistic regression with p value <0.25 were included in the multivariate logistic regression model.

RESULTS

The results achieved by analysis are presented in the following tables. Table 1 gives the overview of the background characteristics of hemodialysis patients interviewed and distribution of the independent variables used in this study. In terms of sex, majority (54.4%) of the participants were male. With regards to age group, majority (55.8%) of the participants were aged 40 to 64 years. With regards to occupation, majority (53.1%) of the participants were unemployed. In terms of education, most of the participants (55.1%) were illiterate or had informal schooling. Just above two third (85.7%) of the participants were currently married, while the remaining 14.3% were either separated/ divorced/widowed.

We found that majority (52.4%) of the participants were in maintenance dialysis for less than four years. Regarding the frequency of maintenance dialysis, about 9 in 10 (91.8%) participants were in hemodialysis twice to thrice a week. In terms of presence of comorbid conditions (HTN, DM, HF, Liver diseases or thyroid disorder) above two third (91.2%) of the participants had comorbid conditions (Table 1).

Table 1: Illness Related Characteristics of the Respondents

Variables	Category	N (147)	%
Duration of maintenance dialysis	Less than 4 years	77	52.4
	4 years and above	70	47.6
Frequency of maintenance dialysis	Twice to thrice a week	135	91.8
	Once a week or once in 2 weeks	12	8.2
Presence of co-morbid conditions (HTN, DM, HF, Liver disease or thyroid disorder)	Yes	134	91.2
	No	13	8.8

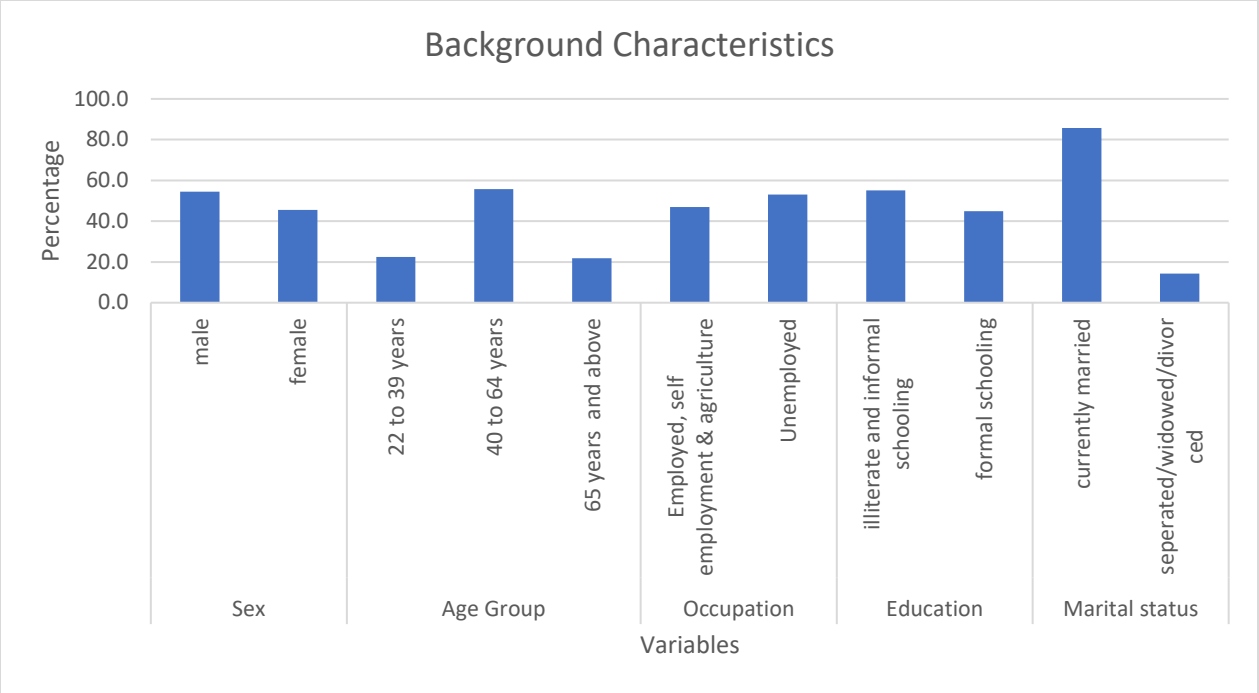

Figure 1: Socio-demographic Characteristics of the Respondents

We found that 37% of the participants had anxiety. Of the hemodialysis patients interviewed, more females (54%) than males (24%) had anxiety. We also found that occurrence of anxiety increased with age, with 50% of the participants in the age group 65 years and above having the condition. Similarly, proportion of anxiety was higher among those with illiterate and informal schooling (42%), those separated /widowed/divorced (62%), and those unemployed (53%). We also found that patient on maintenance dialysis for 4 years and above had increased occurrence of anxiety (40%) and those who required hemodialysis twice to thrice a week (39%). Occurrence of anxiety increased with the presence of comorbid conditions (39%) (Table 2).

We found an overall 38% of the participants with depression. Slightly higher proportion of females (42%) had depression compared to males (35%). Similar to anxiety, occurrence of depression was the highest (60%) among 65 years and above age participants. Occurrence of depression was the highest among illiterate and formal schooling (43%), those separated/widowed/divorced (52%). We found higher proportion (40%) of depression among unemployed participants. Patient on maintenance dialysis for less than 4 years had increased occurrence of depression (43%) and those who required hemodialysis twice to thrice a week (39%). We also found that occurrence of depression increased with the presence of comorbid condition (41%) (Table 2).

We found an overall 21% of the participants with co-morbid anxiety and depression. Slightly more females (28%) than male (15%) had comorbid anxiety and depression. Comorbidity slightly increased with increasing age of the participants. Like anxiety and depression, occurrence of co-morbidity decreased with education. Higher proportion (42%) of separated /widowed/divorced participants had comorbid anxiety and

depression. We found that higher proportion (27%) of participants who were unemployed had comorbid anxiety and depression compared to those who were employed including self-employment and agriculture (14%). Similar to depression, participants on maintenance dialysis for less than 4 years had comorbid anxiety and depression (22%) and those who required hemodialysis twice to thrice a week (22%). Also, higher proportion (22%) of participants who had comorbid conditions had comorbid anxiety and depression (Table 2).

While in multivariate analysis we found that the female participants had nearly two times higher odds of having anxiety compared to males. The participants aged 65 years and above had five times higher odds of having anxiety and participants 40 to 64 years had four times higher odds of having anxiety compared to participants 22 to 33 years of age. Also unemployed participants had nearly four times higher odds of having anxiety compared to those who were employed including self-employment and agriculture. Similarly, participants on maintenance dialysis for twice to thrice a week had seven times higher odds of having anxiety compared to once a week or one in 2 weeks (Table 3).

On the other hand, the participants of age group 65 years and above had four times higher odds of having comorbid anxiety and depression compared to those of 22 to 39 years age group. Similarly, unemployed participants had nearly four times higher odds of having comorbid anxiety and depression compared to employed including self-employment and agriculture (Table 3).

DISCUSSION

A cross-sectional hospital-based study was carried out to identify the proportion of anxiety or depression among patient undergoing hemodialysis in a tertiary care center. In this study, 37% of the respondents had anxiety and 38% of the respondents had depression. Similarly, a substantial proportion (21%) of the respondents had comorbid anxiety and depression.

The proportion of anxiety and depression is slightly lower than one of the studies conducted in Tehran which shows that 63.9% of hemodialysis patients had anxiety, 60.5% had depression[6]. One of the other studies from similar settings reported that depression in 33.3%, anxiety disorders in 11.9%, and both anxiety and depressive disorders concurrently in 14.3% of the patient's[7]. The present study showed that more women (42%) had anxiety compared to men (35%) along with higher odds of anxiety among women post adjustment of covariates. This was in contrary with the findings from the other study on prevalence and predictors of depression among hemodialysis patient in Malaysia where they found comparable rates of depression among female (86.3%) and male participants (83.9%) [8]. The finding in the current study was though consistent with the findings of the study conducted in the University of Michigan, female gender was a significant risk factor for depression[9].

In present study, half of the participants (50%) of age group 65 years and above had anxiety and 60% had depression. The findings were consistent with the findings of the study conducted in three general hospitals in the Greece which shows that participants older than 65 years reported a significantly high level of social dysfunction and depression[9, 10]. Higher proportion of separated/widowed/divorced participants had anxiety as well as depression in the current study.

Table 2: Proportion of Anxiety, Depression and Co-morbid Anxiety Depression

Background and Illness related variables	N (147)	Anxiety		Depression		Co Morbid Anxiety & Depression	
		%	95% CI	%	95% CI	%	95% CI
Sex							
Male	80	23.8	15.6-34.4	35	24.4-45.6	15	8.6-24.8
Female	67	53.7	41.6-65.4	41.8	30.5-54.0	28.4	18.7-40.4
Age Group							
22 to 39 years	33	21.2	10.3-38.6	33.3	19.2-51.2	12.1	4.5-28.7
40 to 64 years	82	39.0	29.0-50.1	31.7	22.5-42.7	17.1	10.3-27.0
65 years and above	32	50.0	33.0-67.0	59.4	41.5-75.1	40.6	24.9-58.5
Education							
Formal schooling	66	31.8	21.6-44.1	31.8	21.6-44.1	16.7	9.4-27.9
Illiterate and informal schooling	81	42.0	31.6-53.1	43.2	32.8-54.3	24.7	16.4-35.4
Marital status							
Currently married	126	33.3	25.6-42.1	35.7	27.8-44.6	17.5	11.7-25.2
Separated/widowed/divorced	21	61.9	39.5-80.1	52.4	31.2-72.7	42.3	23.5-64.7
Occupation							
Employed including self-employment and agriculture	69	20.3	12.3-31.6	36.2	25.7-48.3	14.5	7.9-25.1
Unemployed	78	52.6	41.4-63.5	39.7	29.4-51.1	26.9	18.1-38.0
Duration of maintenance dialysis							
Less than 4 years	77	35.1	25.1-46.5	42.9	32.2-54.3	22.1	14.1-32.8
4 years and above	70	40	29.1-52.0	32.9	22.8-44.8	20	12.1-31.2
Frequency of maintenance dialysis							
Once a week or once in 2 weeks	12	16.7	3.9-49.7	25	7.8-56.9	8.3	1.0-44.0
Twice to thrice a week	135	39.3	31.3-47.8	39.3	31.3-47.8	22.2	15.9-30.1
Presence of comorbid conditions (HTN, DM, HF, Liver disease or thyroid disorder)							
No	13	23.1	7.2-53.7	7.7	1.0-41.5	7.7	1.0-41.5
Yes	134	38.8	30.8-47.4	41	32.9-49.7	22.4	16.1-30.3
Total Proportion	147	37.4	29.9-45.6	38.1	30.5-46.3	21.1	15.2-28.5

Table 3: Factors Associated with Anxiety, Depression and Co Morbid Anxiety Depression

Background and Illness related variables	N = 147	Anxiety		Depression		Co Morbid Anxiety & Depression	
		Crude OR (95% CI)	Adjusted OR (95% CI)	Crude OR (95% CI)	Adjusted OR (95% CI)	Crude OR (95% CI)	Adjusted OR (95% CI)
Sex							
Male	80	1.0	1	1	NA*	1	1
Female	67	3.73(1.84-7.54)	1.99(0.78-5.09)	1.33(0.68-2.60)		2.24(1.00-5.05)	1.85(0.723-4.71)
Age Group							
22 to 39 years	33	1	1	1	1	1	1
40 to 64 years	82	2.38(0.92-6.12)	**4.39(1.35-14.29)**	0.93(0.39-2.20)	0.91(0.34-2.44)	1.49(0.45-4.92)	**3.76(1.19-11.85)**
65 years and above	32	3.71(1.26-10.99)	**5.04(1.24-20.55)**	2.92(1.06-8.03)	2.67(0.76-9.40)	4.96(1.41-17.51)	**4.15(1.03-16.70)**
Education							
Formal schooling	66	1	1	1	1	1	1
Illiterate and informal schooling	81	1.55(0.78-3.06)	0.51(0.20-1.32)	1.63(0.83-3.22)	1.39(0.60-3.23)	1.64(0.72-3.73	0.50(0.19-1.30)
Marital status							
Currently married	126	1	1	1	1	1	1
Separated/widowed/divorced	21	3.25(1.25-8.45)	2.51(0.71-8.83)	1.98(0.78-5.02)	1.87(0.57-6.11)	3.55(1.33-9.44)	2.99(0.80-11.14)
Occupation							
Employed including self-employment and agriculture	69	1	1	1	NA*	1	1
Unemployed	78	4.35(2.09-9.09)	**3.79(1.47-9.73)**	1.16(0.60-2.26)		2.17(0.94-5.02)	**3.54(1.38-9.08)**
Illness related characteristics (n=147)							
Duration of maintenance dialysis							
Less than 4 years	77	1	NA*	1	1	1	NA*
4 years and above	70	1.23(0.63-2.41)		0.65(0.33-1.28)	0.51(0.24-1.08)	0.88(0.40-1.96)	
Frequency of maintenance dialysis							
Once a week or once in 2 weeks	12	1	1	1	NA*	1	NA*
Twice to thrice a week	135	3.23(0.68-15.33)	**6.79(1.20-38.42)**	1.94(0.50-7.49)		3.14(0.39-25.33)	
Presence of comorbid conditions (HTN, DM, HF, Liver disease or thyroid disorder)							
No	13	1	NA*	1	1	1	1
Yes	134	2.11(0.56-8.04)		8.35(1.06-66.13)	**10.84(1.29-91.07)**	3.46(0.43-27.7)	3.55(0.75-16.85)

* p > 0.25 in bivariate logistic regression, so not included in multivariate analysis
Significant findings in multivariate analysis are highlighted with bold.

Out of the factors assessed, age 40 years and above, being unemployed and frequency of hemodialysis twice to thrice a week were found to be independently associated with anxiety. Also, presence of comorbid conditions was associated with depression. And age 40 years and above and being unemployed were also associated with co-morbid anxiety and depression. The primary focus of this study was to reveal the magnitude of common mental disorders such as anxiety and depression among hemodialysis patients. Depression and anxiety have a noticeable impact on patient's quality of life. For instance, the number of comorbid medical conditions is highly correlated with anxiety which in turn affects quality of life[11, 12].

The study has a number of strengths. In this study, standard and widely used instrument was used to measure the case-ness of anxiety and depression and the instrument was also validated in the Nepalese context. Hemodialysis patients were included as the participants of the study. Some of the researchers themselves collected the data along with some research assistants. Nevertheless, there were some limitations as well. The study followed a sequential sampling and the study being carried out in just one hospital; the generalizability is limited. Though we have tried to consider some of the factors associated with anxiety and depression, the cross-sectional nature of the study does not explain causality.

CONCLUSION

A substantial proportion of hemodialysis patients had anxiety, depression as well as co-morbid anxiety and depression. Female patients, patients with low or no education, who were separated/divorced/widowed and those unemployed had higher prevalence. These common psychiatric disorders may be associated with increased complications, increased mortality, hospital admission and length of hospital stay, and decreased quality of life and functional ability. So, it is important to conduct regular and systematic psychiatric consultations and counselling to the patients undergoing hemodialysis. Early detection through an understanding of the predictors and symptoms of anxiety and depression, as well as appropriate cognitive and pharmacological treatment modalities, will potentially improve the quality of life of hemodialysis patients.

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REFERENCES

1. Wafula HN. Assessing Health Literacy in Promotion of Self-management Among Patients With Chronic Kidney Disease Attending Kenyatta National Hospital; 2020 [Available from: http://erepository.uonbi.ac.ke/handle/11295/154632. [Google Scholar]
2. Kidney Health Information Service. Fact sheet Haemodialysis: A Treatment Option. 2017. Available from https://kidney.org.au/uploads/resources/haemodialysis-fact-sheet-kidney-health-australia.pdf. [Google]
3. The Kidney Project. University of California San Francisco. Department of Bioengineering and Therapeutic Sciences. 2021. Available from https://pharm.ucsf.edu/kidney/need/statistics. [Google Scholar]

4. Turkistani I, Nuqali A, Badawi M, Taibah O, Alserihy O, Morad M, Kalantan E. The prevalence of anxiety and depression among end-stage renal disease patients on hemodialysis in Saudi Arabia. Renal failure. 2014 Nov 1;36(10):1510-5 [Available from: https://www.tandfonline.com/doi/full/10.3109/0886022X.2014.949761. [Google Scholar]
5. Palmer S, Vecchio M, Craig JC, Tonelli M, Johnson DW, Nicolucci A, Pellegrini F, Saglimbene V, Logroscino G, Fishbane S, Strippoli GF. Prevalence of depression in chronic kidney disease: systematic review and meta-analysis of observational studies. Kidney international. 2013 Jul 1;84(1):179-91. [Available from: https://www.sciencedirect.com/science/article/pii/S0085253815559279. [Google Scholar]
6. Rahimipour M, Shahgholian N, Yazdani M. Effect of hope therapy on depression, anxiety, and stress among the patients undergoing hemodialysis. Iranian journal of nursing and midwifery research. 2015 Nov;20(6):694. doi: 10.4103/1735-9066.170007. [Google Scholar]
7. Bocéréan, C., Dupret, E. A validation study of the Hospital Anxiety and Depression Scale (HADS) in a large sample of French employees. BMC Psychiatry **14,** 354 (2014). https://doi.org/10.1186/s12888-014-0354-0
8. Kokoszka A, Leszczyńska K, Radzio R, Daniewska D, Łukasiewicz A, Orzechowski WM, Piskorz A, Gellert R. Prevalence of depressive and anxiety disorders in dialysis patients with chronic kidney disease. Arch Psychiatry Psychother. 2016 Mar 1;1:8-13. doi: 10.12740/APP/61977. [Google Scholar]
9. Khan A, Khan AH, Adnan AS, Sulaiman SA, Mushtaq S. Prevalence and predictors of depression among hemodialysis patients: a prospective follow-up study. BMC public health. 2019 Dec;19(1):1-3. [Available from: https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-019-6796-z.[Google Scholar]
10. Theofilou P. Depression and anxiety in patients with chronic renal failure: the effect of sociodemographic characteristics. International journal of nephrology. 2011 Jan 1;2011. [Available from https://www.hindawi.com/journals/ijn/2011/514070/. [Google Scholar]
11. Turkistani I, Nuqali A, Badawi M, Taibah O, Alserihy O, Morad M, Kalantan E. The prevalence of anxiety and depression among end-stage renal disease patients on hemodialysis in Saudi Arabia. Renal failure. 2014 Nov 1;36(10):1510-5. [Available from: https://www.tandfonline.com/doi/full/10.3109/0886022X.2014.949761. [Google Scholar]
12. Brito DC, Machado EL, Reis IA, Carmo LP, Cherchiglia ML. Depression and anxiety among patients undergoing dialysis and kidney transplantation: a cross-sectional study. Sao Paulo Medical Journal. 2019 Apr;137(2):137-47. doi: 10.1590/1516-3180.2018.0272280119. [Google Scholar]
13. Straube BM. Do health outcomes vary by profit status of hemodialysis units? Clin J Am Soc Nephrol. 2014;9(1):1–2.Available from https://cjasn.asnjournals.org/content/9/1/1.short. [Google Scholar]