Available online at http://www.journalcra.com

International Journal of Current Research
Vol. 7, Issue, 04, pp.15087-15093, April, 2015

INTERNATIONAL JOURNAL OF CURRENT RESEARCH

ISSN: 0975-833X

RESEARCH ARTICLE

PSYCHIATRIC IMPACT OF HEMODIALYSIS ON UREMIC PATIENTS IN UPPER EGYPT

***,[1]Taher Abd-El-Raheem and [2]Ahmed Fathy Hamed**

[1]Neuropsychiatry Department, Faculty of Medicine, Sohage University, Egypt
[2]Public Health and Community Medicine Department, Egypt

ARTICLE INFO

Article History:
Received 09th January, 2015
Received in revised form
25th February, 2015
Accepted 23rd March, 2015
Published online 30th April, 2015

Key words:

Psychiatric,
Impact,
Hemodialysis,
Uremia,
Upper Egypt.

ABSTRACT

Background: Chronic kidney disease is a multifaceted problem having both physical and psychological connotations on the patient. Depression, anxiety, sleep and sexual disorders are common complications observed in patients with renal failure under hemodialysis.
Aim of the work: Recognizing the psychiatric complications of hemodialysis on end stage renal disease patients.
Methods: A 2-year cross-sectional study at Sohage Governorate, Upper Egypt, in which 1191 hemodialysis patients were enrolled for detection of psychiatric disorders through application of semi-structured interview, Quick Inventory of Depressive Symptomatology [Self-Report] (QIDS-SR), Hamilton Anxiety Rating Scale (HAM-A), Pittsburgh Sleep Quality Index (PSQI) and Arizona sexual experience Scale (ASEX).
Results: Psychiatric disorders are common among hemodialysis patients particularly depressive (61.46%), anxiety (35.68%), sleep (67.34%) and sexual disorders (48.36%). Depressive, anxiety and sleep disorders are significantly more prevalent among female hemodialysis patients (58.61%, 70.82% and 60.22% respectively) than male hemodialysis patients (41.39%, 29.18% and 39.78%) while sexual disorders are commoner in male (60.59%) than female (39.41%) hemodialysis patients.
Conclusion: Psychiatric sequels of hemodialysis include depression, anxiety, sleep and sexual disorders. They are more common among female patients except sexual disorders which are more common among male patients.

INTRODUCTION

Chronic kidney disease (CKD) and end-stage renal disease are a growing public health problem worldwide with treatment options of either life-long hemodialysis (HD) or renal transplant (Cloyd *et al.,* 2013). The availability of dialysis and treatment rates in Egypt were 129.3; per million populations (pmp) (Naicker, 2003). Hemodialysis patients usually experience high levels of psychological stress and maintaining on hemodialysis for long periods imposes a high risk of complications. (Mahdavi *et al.,* 2013, Youssef and Neemat 2013 and Sanchez 2013). Increased life expectancy and the availability of treatments provided by modern medicine have given rise to a new situation in which survival may be prolonged without the patient having an acceptable quality of life. (Katayama 2014) Patients on haemodialysis face many stresses which challenged patients and connected with their illness, include, conflicts of dependency and independency on dialysis machines, dietary restrictions, long duration of each dialysis session, functional restrictions, loss of job, loss of role and alterations in sexual functions (Claxton *et al.,* 2010).

****Corresponding author: Taher Abd-El-Raheem,***
Neuropsychiatry department, Faculty of medicine, Sohage University, Egypt.

Affective disorders, particularly depression, are the commonest and probably the most important psychopathological complication of hemodialysis (Hamody *et al.,* 2010). Hemodialysis patients are commonly complaining of symptoms of anxiety that can affect the medical course of the illness (Bossola *et al.,* 2010). Sleeping disorders are common among chronic hemodialysis patients and Subjective data about hemodialysis and sleep disturbance revealed marked affection of sleep quality in HD patients, as evidenced by excessive day time sleepiness night awakening, difficult morning arousal and limb pains. Objective analysis showed differences in sleep architecture, more sleep disordered breathing and more periodic limb movement disorders (El-Refaey *et al.,* 2013). Uremic Restless Leg Syndrome (RLS) is an important factor causing sleep impairment in patients on hemodialysis (Grade *et al.,* 2013). Hemodialysis, the major form of renal replacement therapy, has a major impact on both men's and women's sexuality and sexual performance (Beal, 2010). Male hemodialysis patients have depressed erectile function, poor intercourse satisfaction and impaired sexual desire function (Al kallaf, 2019. The prevalence of sexual disorders (SD) among women on HD is very high, reaching nearly 80%. Loss of libido and inability to

reach orgasm are common in female hemodialysis patients (Santos, 2013).

Aim of the work

The aim of this study was to identify the psychiatric sequels among patients on hemodialysis in Upper Egypt.

Subjects and methods

One thousand two hundred eighty four maintenance hemodialysis patients recruited through regular visits to all dialysis centers in Sohage Governmente were enrolled in this study from June 2008 to May 2010.

Distribution of hemodialysis patients according to residency in Sohage government

Name of the city	City population	No. of hemodialysais patients	Percentage of hemodialysis patients to 100000 population
Tema	378029	96	25
Tahta	400311	83	21
Geheana	235047	60	26
ALmaragha	347087	93	27
Sohag	663972	220	33
ALmenchaa	494869	145	29
Gerga	475652	158	33
Albaliana	449811	140	31
Sakolta	208323	69	33
Ekmeem	348482	107	31
Dar-Alsalam	363449	113	31
total	4365032	1284	29

Distribution of hemodialysis patients according to hemodialysis centers in Sohage government

	Hemodialysis Center	No. of hemodialysis patients
1-	Sohag general hospital.	110
2-	Tahta general hospital.	82
3-	Gerga general hospital.	129
4-	Tema central hospital.	91
5-	Geheana central hospital.	45
6-	Almaragha central hospital.	47
7-	Almenchaa central hospital.	51
8-	Albaliana central hospital.	132
9-	Sakolta central hospital.	48
10-	Ekmeem central hospital.	49
11-	Dar-Alsalam central hospital.	92
12-	Sohag fever hospital.	43
13-	Sohag educational hospital.	98
14-	Sohag university hospital.	183
15-	Alhelal health insurance hospital.	0
16-	Rashid private hospital.	51
17-	Red crescent hospital.	33
18-	Dar-Alsalam dialysis center.	0
19-	Altohamey private dialysis center.	0
	Total	1284

The study design was cross sectional. The study was approved by Sohag Faculty of Medicine ethics committee and review board which belongs to Sohag University. All patients signed an informed consent. All patients were subjected to explorative semi-structured interview to evaluate the pre-dialysis psychological condition and diagnose any current psychiatric disorder based on DSM IV TR diagnostic criteria (APA, 2000). Selection of the patients who will participate in the study based on inclusion and exclusion criteria.

Inclusion criteria

- Age of the participant range from 18 to 65 years.
- Undergoing hemodialysis for at least 6 months.
- Undergoing three weekly sessions of hemodialysis that lasted four hours each.
- Alert to give verbal or written answers to the questions of the scales.
- Give informed consent.
- End stage renal disease was diagnosed by blood test, urine tests renal US and CT scan.

Exclusion criteria

- History of diagnosed psychiatric disorder before dialysis.
- Inability to comprehend survey questions.
- Marked physical illness like hemiplegia and aphasia or hearing disability.
- Died before completing psychometric evaluation.
- Refuse to participate or unwilling to complete the study.

Ninety three patients were excluded from the study because of different reasons according to the above mentioned exclusion criteria, thus the remaining 1191 patients were finally included in the study with (7.24%) drop out ratio.

Psychiatric disorders were confirmed by using these psychometric tests

1-Quick Inventory of Depressive Symptomatology (Self-Report) [QIDS-SR]: The test has been developed in a self report version which takes only 5-10 minutes to be administered. Its main purpose is to assess severity of depressive symptoms.

Scoring: Total score range from 0-27, 5=normal, 6-10=mild, 11-15= moderate, 16-20=severe, and ≥21=very severe (Rush *et al.,* 2003).

2-Hamilton Anxiety Rating Scale (HAM-A): It is a clinician-rated with 5-10 minutes administration time. Its main purpose is to assess the severity of symptoms of anxiety (Hamilton1959). The HAM-A was one of the first rating scales and is still widely used today in both clinical and research settings (Borkovec and Costello 1993). The scale consists of 14 items, each defined by ac series of symptoms and measures both psychic anxiety (mental agitation and psychological distress) and somatic anxiety (physical complaint related to anxiety).

Scoring: Each item is scored on a scale of 0 not present to 4 (severe) with a total score range of 0-56, where <17 indicate mild severity, 18-24 mild to moderate severity and 25-30 moderate to severe (Hamilton1959).

3-Pittsburgh Sleep Quality Index (PSQI): The PSQI is a self-report instrument developed to assess sleep quality over the previous month and represents a brief, clinically useful assessment of a variety of sleep disturbances that might affect sleep quality and can be used as a screening tool to identify good and poor sleepers.

Scoring: The majority of scale items are scored on a 0(no difficulty) to 3 (severe difficulty). The scale yields 7 component scores and a global score with a range of 0-21; a global score of ≥5 suggests significant sleep disturbance (Buysse *et al.,*2000).

4-Arizona sexual experience Scale (ASEX): The ASEX is a brief 5-item measure of sexual functioning, specifically, sexual drive, arousal, penile erection/vaginal lubrication, ability to reach orgasm and satisfaction with orgasm over the past week.

Scoring: Items are rated on a 6-point scale ranging from 1 (hyperfunction) through 6 (hypofunction) providing a total score rang of 5-30 with the higher scores indicating more sexual dysfunction. A total score of > 18 or a score ≥ 5 (very difficult) on any single item is indicative of clinically significant sexual dysfunction (McGahuey *et al.,* 2000).

Statistics

All statistical calculations were performed using computer programs Microsoft Excel version 7 (Microsoft Corporation, NY, USA) and SPSS version 13 (Statistical Package for the Social Science; SPSS Inc., Chicago, IL, USA) statistical program. Data were statistically described in terms of number and percentage. Comparison of the studied groups was done using the Chi square test to compare categorical variables. A p-value less than 0.05 was considered statistically significant.

RESULTS

The study was conducted with 1191 participants with age range from 18-65 years and the mean age was 47±9 years and the mean duration of dialysis was 17±6 months.The male studied patients were, 682 (57.3%) with age range from 18-64 years and the mean age was 46±7 and the mean duration of dialysis was 15±5 months, while the female studied patients were 509 (42.7%) with age range from 20-65 years and the mean age was 49±11 and the mean duration of dialysis was 19±9months.

Table (1) shows that depression was detected in 732 (61.46%) of hemodialysis patients, in which females 429 (58.61%) were significantly more affected than males 303 (41.39%). Mild and moderate depression were detected in [149 (51.03%) and 84 (47.73%) respectively] of male hemodialysis patients and in [143(48.97%) and 92 (52.27%) respectively] of female hemodialysis patient with no statistically significant difference. The rate of severe and very severe depression among female hemodialysis patients [113 (76.87%) and 81 (69.23%) respectively] was significantly higher than that of male hemodialysis patients [34 (23.13%) and 36 (30.77%) respectively]. Total hemodialysis patients with mild, moderate, severe and very severe depression were 292(39.89%), 176(24.05%), 147(20.08%) and 117 (15.98%) respectively.

Table (2) revealed that anxiety disorders were detected in 425 (35.68%) of hemodialysis patients, in which females 301(70.82%) were significantly more affected than males 124 (29.18%).

Table 1. shows the prevalence of depression in hemodialysis patients according to Quick Inventory of Depressive Symptomatology (QIDS)

No. % Item	Male hemodialysis patients		Female hemodialysis patients		Total hemodialysis patients (1191)		P-Value
	No.	%	No.	%	No.	%	
Depression	303	41.39%	429	58.61%	732	61.46%	<0.001
Mild	149	51.03%	143	48.97%	292	39.89%	0.619
Moderate	84	47.73%	92	52.27%	176	24.05%	0.393
Severe	34	23.13%	113	76.87%	147	20.08%	<0.001
Very severe	36	30.77%	81	69.23%	117	15.98%	<0.001
Total					732	100%	

Table 2. shows the prevalence of anxiety disorders in hemodialysis patients according to Hamilton Anxiety Rating Scale (HAM-A)

	Male HD patients		Female HD patients		Total HD patients (1191)		P-value
Item No. %	No.	%	No.	%	No.	%	
Anxiety disorders	124	29.18%	301	70.82% S	425	35.68%	<0.001
Mild to moderate	76	28.79%	188	71.21% S	264	62.12%	<0.001
Moderate to severe	48	29.81%	113	70.19% S	161	37.88%	<0.001
Total					425	100%	

Table 3. shows the prevalence of sleep disorders in hemodialysis patients according to Pittsburg Sleep Quality Index (PSQI)

No. % Item	Hemodialysis Males		Hemodialysis Females		Total hemodialysis patients (No. =1191)		P-value
	No.	%	No.	%	No.	%	
Sleep disorders	319	39.78%	483	60.22% S	802	67.34%	<0.001
Insomnia	154	36.23%	271	63.77% S	425	52.99%	<0.001
Restless Leg Syndrome	125	33.16%	252	66.84% S	377	47.01%	<0.001
Sleep apnea	45	49.45%	46	50.55% NS	91	11.35%	0.882
Snoring	52	65.82%	27	34.18% S	79	9.85%	<0.001
Night mares	52	45.22%	63	54.78% S	115	14.34%	0.068
Narcolepsy	10	52.63%	9	47.37% NS	19	2.37%	0.745
Mixed sleep disorders	172	49.28%	177	50.72%	349	43.52%	0.574

Mild to moderate anxiety disorders and moderate to severe anxiety disorders were significantly more frequent among female hemodialysis patients [188 (71.21%) and 113 (70.19%) respectively] than male hemodialysis patients [76 (28.79%) and 48 (29.81%) respectively]. Total hemodialysis patients with mild to moderate and moderate to severe anxiety were 264(62.12%) and 161(37.88%) respectively.

Table (3) revealed that sleep disorders were detected in 802 (67.34%) of the studied hemodialysis patients and the rate was significantly higher among females 483 (60.22%) than males 319 (39.78%). Insomnia, restless leg syndrome and night mares were detected in [425 (52.99%), 377 (47.01%) and 115(14.34%) respectively] of hemodialysis patients with significantly higher prevalence among females [271 (63.77%), 252(66.84%) and 63(54.78%) respectively] than males [154 (36.23%), 125(33.16%) and 52(45.22%) respectively]. Sleep apnea and narcolepsy were detected in [91 (11.35%) and 19 (2.37%) respectively] of hemodialysis patients, of them 45 (49.45 %) and 10 (52.63%) respectively] were males and [46 (50.55%) and 9(47.37%) respectively) were females with no significant difference. Snoring was reported in 79(9.85%) of hemodialysis patients with significantly higher frequency in males 52 (65.82%) than females 27 (34.18%).

Table (4) shows that sexual disorders were detected in 576 (48.36%) of the studied hemodialysis patients with significantly more prevalence among males 349 (60.59%) than females 227 (39.41%). Hemodialysis patients who have lack of sex drive were 145 (25.17%) with significantly more frequency among females 78 (53.79%) than males 67 (46.21%). Impaired sexual arousal was detected in 182 (31.60%) of the studied hemodialysis patients with no significant difference between males 89 (48.90%) and females 93 (51.10%). Erectile dysfunction was present in 151 (43.27%) of the studied male hemodialysis patients while difficulty in vaginal moisture was present in 63 (27.75%) of the studied female hemodialysis patients. Impaired orgasm was found in 143 (24.83%) of the studied hemodialysis patient with significantly higher frequency among females 94 (65.73%) than males 49 (34.27%). Orgasm dissatisfaction was present in 159 (27.60%) of the studied hemodialysis patients with significantly more frequency among females 91 (57.23%) than males 68 (42.77%). Mixed sexual dysfunction was found in 208 (36.11%) of the studied hemodialysis patients with significantly more frequency among males 120 (57.69%) than females 88 (42.31%).

DISCUSSION

Psychiatric disorders are an understudied yet important concern in the overall mental health of hemodialysis patients in Upper Egypt. Parallel to previous results (Fukunishi *et al.,*2002 and Fenoze *et al.,*2012 22), this article attempts to explain the psychological impact of maintenance hemodialysis and consequently their vulnerability to develop psychiatric illnesses especially depression which was highly prevalent in hemodialysis patients as they feel hopeless and worry about finances with loss of sexual function, family burden and loss of independence.

On the other hand Cruz LN *et al.,* (2010) observed that depressive symptoms were uncommon among hemodialysis patients. The best plausible explanation for the great difference in the prevalence of depression in patients treated with hemodialysis is the variability of the methods of estimation and screening techniques used besides the assessment of depression is complicated by the considerable overlap of depressive and uremic symptoms. The data presented in this work goes hand in hand with previous results (Andrade *et al.,* 2010) which demonstrated that the prevalence of depression was more common in females than males who were under regular hemodialysis while the study of Klaric M. *et al.* (2009) has not shown any significant difference in the prevalence of depression regarding gender. In the present study and regarding to the severity of depression in hemodialysis patients, we found that severe and very severe depression (20.08% and 15.98% respectively) were not uncommon contrary to the results of Fukunishi I *et al.,*(2002) who found that severe depression occurred only in 3% of hemodialysis patients. Parallel to our results Fukunishi I *et al.* (2002) stated that the frequency of severe and very severe depression was higher among female than male hemodialysis patients.

The findings of this study demonstrated that the prevalence of anxiety disorders (35.68%) was high in patients being treated by hemodialysis which is supported by other studies (Cukor *et al.,*2007). Similar to our results I.Vazquez *et al.,* (2004) reported that anxiety disorders were much more common in females compared to males treated with hemodialysis. Our finding provide evidence that the majority of hemodialysis patients with anxiety disorders classified to have mild to moderate type (62.12%) while 37.88% were classified to have moderate to severe type which is similar to the results Cukor D *et al.,*(2007) who mentioned that 27% of urban hemodialysis patients had a major anxiety disorder but contradictory results

Table 4. shows the prevalence of sexual dysfunction in hemodialysis patients according to Arizona Sexual Experience Scale (ASEX)

No. % Item	Hemodialysis		Hemodialysis Females		Total hemodialysis patients (No. =1191)		P-Value
	No.	%	No.	%	No.	%	
Sexual dysfunction	349	60.59%	227	39.41%	576	48.36%	0.001
Lack of sex drive	67	46.21%	78	53.79% S	145	25.17%	0. 078
Impaired sexual arousal	89	48.90%	93	51.10% NS	182	31.60%	0.616
Erectile dysfunction/	151	43.27%	-	-	-	-	
Difficult vaginal moisture	-	-	63	27.75%	-	-	
Impaired orgasm	49	34.27%	94	65.73% S	143	24.83%	<0.001
Orgasm dissatisfaction	68	42.77%	91	57.23% S	159	27.60%	0.009
Mixed sexual dysfunction	120	57.69%	88	42.31%	208	36.11%	0.002

obtained by Maurizio Bossola *et al.,*(2010) who argued that 47.5% of hemodialysis patients had mild anxiety symptoms and 48.75% has moderate anxiety symptoms. In the present study, the prevalence of mild to moderate anxiety disorders and moderate to severe anxiety disorders were much more common in female patients (71.21% and70.19% respectively) than male patients receiving hemodialysis (28.79% and 29.81% respectively), parallel to the results of Maurizio Bossola *et al.,*(2010) who postulated that women had higher anxiety scores than men while Taskapan H et al (2005) found no relationship between psychiatric disorders and gender in hemodialysis patients.

In agreement with our results, Sabry *et al.,* (2010) stated that the prevalence of sleep disorders in hemodialysis patients was very high. Paparrigopoulos *et al.,*(2009) described that sleep disturbance in hemodialysis patients is more common in females which is similar to our results while different results reported by Guney *et al.,*(2010) who said that poor sleep quality is common in hemodialysis patients with 1.33:1 male to female ratio. Our study revealed that insomnia was common in hemodialysis patients with high prevalence in females similar to previous results (Al-Jahdali, 2012). Supported by previous studies, (Salman, 2011) the results of the present work revealed that the prevalence of restless leg syndrome among hemodialysis patients (47.1%) is higher than the general population; 7.2% -11.5%. Our study demonstrated that restless leg syndrome is more common among female (66.67%) than male patients (33.33%) receiving hemodialysis while Salman (2011) reported that no significant difference in gender regarding the prevalence of restless leg syndrome in hemodialysis patients. The obtained results from our study showed that sleep apnea was uncommon (11.08%) in hemodialysis patients contrary to the results of Sabry *et al.,* (2010) who stated that the prevalence of sleep apnea was 31.8% among hemodialysis patients however; using different tools of assessment was a possible explanation of this difference. In this study when we look at hemodialysis patients who appeared to have snoring, we found that it was uncommon complaint (9.91%) whereas the finding acknowledged in the study of Sabry *et al.* (2010) suggested that snoring was not uncommon (27.3%) in hemodialysis patients which may be interpreted by feeling of embarrassment by the Upper Egypt hemodialysis patients to address snoring as a complaint. In the present work snoring was more common in male patients (66.95%) than female patients (33.05%) and to the best of our knowledge we didn't get a reference supporting this data.

This study indicated that night mares were common complaint (57.26%) among hemodialysis patients which were more prevalent than the general population; 50% (Zadra *et al.,* 2006). Night mares were more frequent in female patients (54.99%) than male patients (45.01%) treated with hemodialysis. In the present work, narcolepsy was a rare presentation in hemodialysis patient (2.37%) but still much more common than the general population (0.02-0.16%) (Mendelson, 2009). In the present research narcolepsy was about to be similar in frequency in male (51.75%) and female (48.28%) hemodialysis patients. Depression, anxiety and sleep disorders were more common in females as three weekly sessions of hemodialysis that lasted four hours each may disturb the daily life routine in females more than males especially in Upper Egypt as many females are housewives and they are responsible on all household activities and the female patients are easily to express and may exaggerate her complaints. Also these disorders are twice as common in females as males in the general population.

Our study has shown the high frequency of sexual dysfunction (48.36%) in patients receiving hemodialysis similar to the data gathered by Santos *et al.,* (2013) while Alkhallaf (2010) found that the disturbance of sexual function among hemodialysis patients was controversial. The obtained results in this study indicated that lack of sex drive was a frequent complaint in hemodialysis patients (25.27%), similar to the results of Filocamo *et al.,* (2009) however our study showed that lack of sex drive was more common in female patients (53.82%) than male patients (64.18%) treated with hemodialysis, contrary to the results of Lew-Starowicz and Gellert (2009). In this work we recognized that impaired sexual arousal was a common problem in hemodialysis patients (31.74), similar to the results cited by Basok *et al.,* (2009). The present study sought to explore the high frequency of erectile dysfunction in male hemodialysis patients (43.11%) which is similar to previous results (Bellinghier *et al.,* 2008). Iglesias P *et al.,* (2012) clarified the cause of erectile dysfunction in men under hemodialysis as low testosterone levels. Our data in this work revealed that difficult vaginal moisture was common in female hemodialysis patients (27.7%), however it was less common than the adult woman population (39%) (Lindau *et al.,* 2007). Based on the results of this study we denoted that impaired orgasm was also a common problem in hemodialysis patients (24.52%) parallel to the data gathered by Filocamo *et al.,* (2009). On the other hand AL-Kallaf (2010) found that hemodialysis patients had normal orgasmic function. The current study demonstrated that impaired orgasm was more common in female (66.1%) than male (33.9%) hemodialysis patients supported by the data collected by Lew-Startwicz and Gellert (2009) who said that anorgasmia occurs in 80.7% of females under hemodialysis while inhibited or lack of ejaculation occurs only in 51.5% of males under hemodialysis.

Our results showed that orgasm dissatisfaction was a prevalent complaint in hemodialysis patients similar to the results of Seck *et al.* (2011) who cited that 44.7% of hemodialysis patients are not satisfied regarding orgasm and Al-Kallaf (2010) reported that overall orgasm satisfaction is low in hemodialysis patients however our study revealed that orgasm dissatisfaction was more common in female (56.87%) than male (43.13%) hemodialysis patients which was close to the results of Rathi and Ramachandran (2012) who said that 55% of female and 40% of male hemodialysis patients have orgasm dissatisfaction. Rathi and Ramachandran (2012) and 55% Sakai *et al.* (2013) referred sexual dysfunction in males to arterial factors, venous leakage, psychological factors, low free testosterone levels, and drugs but sexual dysfunction in female hemodialysis patients was mainly due to hormonal factors and manifests as menstrual irregularities, amenorrhea, lack of vaginal lubrication and failure to conceive.

Conclusion

Psychiatric sequels of hemodialysis include depression, anxiety, sleep and sexual disorders. They are more common among females except sexual disorders which are more

common among males. Further researches are needed to precisely eliminate the confounding factors which are similarities of depressive and anxiety symptoms with sleep and sexual disorder symptoms.

Strengths

There are few studies concerning the clinical psychiatric problems of patients undergoing hemodialysis in Upper Egypt in addition to the large sample size.

Limitations

We faced a difficulty in application of many psychometric assessment scales in hemodialysis patients especially on those with bad general condition and we can't eliminate the confounding factors because of the similarity of depressive and anxiety symptoms with sleep and sexual disorders.

Recommendations: It is necessary to offer appropriate psychiatric care to patients who opt for conservative hemodialysis treatment by implementing multidisciplinary teams within ESRD units.

Acknowledgments

This research was carried out without funding.

Conflicts of interest

No conflicts of interest to be declared.

REFERENCES

3155%1Sánchez-Tomero, J. A. 2013. Thoughts on the start and withdrawal of dialysis. Nefrologia., 13; 33(6): 758-753.)

55% Beal-Lloyd, D., 55% Groh, C. J. 2012. Dialysis and sexuality. *Nephrol. Nurs. J.,* 39(4):281-3.

55% Bossola, M., 55%%55Ciciarelli, C., 55%%5555 .Di Stasio, E, 55%Conte, G. L. 55%%55 Vulpio, C. and *et al., 2010.* Correlates of symptoms of depression and anxiety in chronic hemodialysis patients. *Gen. Hosp. Psychiatry,* 32(2):125-31.

55%Cloyd, J. M., 55%Ma, Y., 55%Morton, J. M., 55%Tamura, M.K., 55%%55Poultsides, G.A. and 55%%55Visser, B. C. 2013. Does Chronic Kidney Disease Affect Outcomes after Major Abdominal Surgery? Results from the National Surgical Quality Improvement Program. *J. Gastrointest Surg.,* 16.

55%El-Refaey, A. M., 55%%55Elsayed, R. M., 55%%55Sarhan, A., 55%%55Bakr, A., 55%%55Hammad, A., *et al.,* 2013. Sleep quality assessment using polysomnography in children on regular hemodialysis. *Saudi J. Kidney Dis. Transpl.,* 24(4):714-8.

55%Gade, K., 55%%55Blaschke, S., 55%%55Rodenbeck, A., 55%Becker, A., 55%Anderson-Schmidt, H. *et al.,* 2013. Uremic Restless Legs Syndrome (RLS) and Sleep Quality in Patients With End-Stage Renal Disease on Hemodialysis: Potential Role of Homocysteine and Parathyroid Hormone. *Kidney Blood Press Res.,* Oct 25; 37(4-5):458-463.

55%Hamody, A.R., 55%Kareem, A.K., 55%%5555Al-Yasri, A.R., 55%%55Sh Ali, A.A. 2013. Depression in Iraqi hemodialysis patients. *Arab.,* 6(3):169-72.

55%Katayama, A., 55%%55Miyatake, N., 55%Nishi, H., 55%%55Uzike, K., 55%%55Sakano, N., *et al.,* Evaluation of physical activity and its relationship to health-related quality of life in patients on chronic hemodialysis. *Environ Health Prev. Med.* 2014 Feb 5. [Epub ahead of print].

55%Mahdavi, A., 55%%55Gorji, M.A., 55%%55Gorji, A.M., 55%%55Yazdani, J., 55%Ardebil, M.D. 2013. Implementing Benson's Relaxation Training in Hemodialysis Patients: Changes in Perceived Stress, Anxiety, and Depression**.** *N. Am. J. Med Sci.,* 5(9):536-40.

55%Naicker, S. 2003. End-stage renal disease in sub-Saharan and South Africa. *Kidney Int. Suppl.,* (83):S119-22.

55%Sakai, K., 55%%55Fukami, K., 55%%55Yamagishi, S., 55%%55Kaida, Y., 55%Adachi, T., *et al.,* Evidence for a positive association between serum carnitine and free testosterone levels in uremic men with hemodialysis. *Rejuvenation Res.,* 2013; 16(3):200-5.

55%Santos, P.R., 55%%55Capote, J.R. Jr, 55%%55Cavalcanti, JU, 55%Vieira CB, 55%%55Rocha A.R., *et al.,* 2013. Sexual dysfunction predicts depression among women on hemodialysis. *Int. Urol. Nephrol.,* 2013 May 23. [Epub ahead of print].

55%Youssef, D. M. and 55%%55Neemat-Allah, M. A. Hemodialysis in children: eleven years in a single center in Egypt. *Iran J. Kidney Dis.,* 2013; 7(6):468-74.

AL-Jahdali, H. 2012. Prevalence of sleep apnea and excessive day time sleepiness in patients with end-stage renal disease on dialysis. *Saudi J. kidney Dis. Transpl.,* 194(4): 249-254.

ALkallaf, H. H. 2010. Analysis of sexual functions in male nondiabetic hemodialysis patients and renal transplant recipients. *Transpl, Int.,* 23 (2): 176-81.

American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders, 4th edn, Text Revision. Washington, D. C. American Psychiatric Press, 2000.

Andrade, C. P., Cruz, M. C., Urrutia, M., Pereira, O. and Draibe, S. A. 2010. Evaluation of depressive symptoms in patients with chronic renal failure. *J. Nephrol.,* 23(2): 168-74.

Basok, E. K., Astu, N., Rifaioglu, M. M., Kantarci, G., Yildirim, A. and Tokuc, R. 2009. Assessment of female sexual function and quality of life in predialysis, peritoneal dialysis, hermodialysis and renal transplant patients. *Int. Urol. Nephro.,* l; 41(3): 473-81.

Bellinghier, G., Santoro, D., Satto, E. and Savica, V. 2008. (Erectil dysfunction and quality of life in patients with chronic renal failure). *G. Ital Nefrol.,* 25(6): 713-7.

Borkovec, T. and Costello, E. 1993. Efficacy of applied relaxation and cognitive behavioral therapy in the treatment of generalized anxiety disorder *Clin. Consult Psychol.,* 16(4); 611-19.

Buysse, D. J., Reynolds, C. F. 3rd, Monk, T. H., Berman, S. R. and Kupfer, D. J. 1989. The Pittsburgh Sleep Quality Index: a new instrument for psychiatric practice and research. *Psychiatry Res.,* 28(2): 193-213.

Claxton, R. N., Blackhall, L.,Weisbord, S. D. and Holley, J. L. 2010. Undertreatment of symptoms in patients on

maintenance hemodialysis. *J. Pain Symptom Manage,* 39 (2): 211-8.

Cruz, L. N., Fleck, M. P. and Polanczyk, C. A. 2010. Depression as a determinant of quality of life in patients with chronic disease: data from Brazil. *Soc. Psychiatry Psychiatr. Epidemiol.,* 45(10): 953-61.

Cukor, D., Coplan, J., Brown, C., Friedman, S., Cromwell-Smith, A. *et al.,* 2007. Deprssion and anxiety in Urban hemodialysis patients. *Clin. J. Am. Soc. Nephrol.,* 2(3): 484-90.

Fenoze, U., Martio, D., Kalantar-Zaheh, K., Kim, J. C., Reina-Patton, A. *et al.,* 2012. Anxiety and depression in maintenance dialysis patients: Prelimenary Data of a Cross-Sectional Study and brief Literature Review. *J. Ren. Nutr.,* 22(1): 207-10.

Filocamo, M.T., Zanazzi, M., LiMarzi, V., Lombardi, G., Del Popoolo, G. *et al.,* 2009. Sexual dysfunction in women during dialysis and after renal transplantation. *J. Sex Med.* 6 (11): 3125-31.

Fukunishi, I., Kitaoka, T., Shirai, T., Kino, K., Kanematsu, E. and Sato, Y. 2002. Psychiatric disorders among patients undergoing hemodialysis therapy. *Nephron.,* 91:344-347.

Guneyl, L., Atalay, H., Solak, Y., Altintepel Toy, H. *et al.,* 2010. Predictors of sleep quality in hemodialysis patients. *Int. J. Artif Organs.,* 33 (3): 154-60.

Hamilton, M. 1959. The assessment of anxiety states by rating. *Br. J. Med Psychol.,* 32:50-55.

Iglesias, P., Carrera, J. J. and Diez J. J. Gonadal. 2012. dysfunction in men with chronic kidney disease: Clinical features prognostic implications and therapeutic options. *J. Nephrol.,* 25(1): 31-42.

Klaric, M., Letica, I., Petrov, B., Tomic, M., Klaric, B., *et al.,* 2009. Depression and anxiety in patients on chronic hemodialysis in University Clinical Hospital Mostar. *Coll Antropol.,* 33 Suppl, 2: 153-8.

Lew-Starwicz, M. and Gellert, R. 2009. The sexuality and quality of life of hemodialysis patients-ASED Multi Center Study. *J. Sex Med,*Vol. (4): 1062-1071.

Lindau, S. T., Schumm, L. P., Laumann, E. O., Levinson, W., O'Muircheartaigh, C. A. and Waite, L. J. 2007. A study of sexuality and health among older adults in the United States. *N. Engl. J. Med,* 357(8): 762-74.

Maurizio Bossola, Claudia Ciciarelli, Gian Luiqi Conte, CarloVulpio, Giovannaq Luciani and Luiqi Tazza.2010. Correlates of symptoms of depression and anxiety in chronic hemodialysis patients. General Hospital Psychiatry. Psychiatry, *Medicine and Primary Care,* Volume 32, Issue 2, Pages 125-131.

McGahuey, C. A., Gelenberg, A. J., Laukes, C. A., Moreno, F. A., Delgado, P. L., *et al.,* 2000. The Arizona Sexual Experience Scale (ASEX): reliability and validity. *Sex Marital Ther.,* 26 (**1**):25-40.

Mendelson, W. Sleep disorders. In: Sadock, B. J., Sadock, V. A., eds. 2005. Kaplan and Sadock's Comprehensive Textbook of Psychiatry. 8th ed. Vol. 1. Baltimore: Lippincott Williams and Wilkins; 2022.

Paparrigopoulas, T., Theleritis, C., Tzavara, C. and Papadaki, A. 2009. Sleep disturbance in hemodialysis patients is closely related to depression. *Gen Hosp. Psychiatry,* 31(2): 175-7.

Rathi, M. and Ramachandran, R. 2012. Sexual and gonadal dysfunction in chronic kidney disease: Pathbophysiolog. *Indian J. Endocrinol. Metab.,* 16(2): 214-9.

Rush, A.J., Trivedi, M.H., Ibrahim, H.M., Carmody, T.J., Arnow, B., et al., 2003. The 16-Item Quick Inventory of Depressive Symptomatology (QIDS), Clinician Rating (QIDS-C) and Self-Report (QIDS-SR): a psychometric evaluation in patients with chronic major depression. *Biol. Psychiatry.* 54(5):573-83.

Sabry, A. A., Abo-Zenah, H., Wafa, E., Mahmoud, K., El-Dahshan, K. *et al.,* 2010. Sleep disorders in hemodialysis patients. *Saudi J. Kidney Dis. Transp.,* 21 (2): 300-5.

Salman, S. M. 2011. Restless legs Syndrome in patients on hemodialysis. Saudi J Kidney Dis Transpl (2011); 22(2): 368-72.

Seck, S. M., Dahaba, M., Diouf , B., Cisse, M. M., Gueye, S. Ka, E. F. and Niang, A. 2011. The burden of erectile dysfunction in dialysis patients in Senegal. *Hemodial. Int.,* 15(2): 280-3.

Taskapan, H., Ates, F., Kaya, B., Emul M, Kaya. *et al.,*2005. Psychiatric disorders and large interdialytic weight gain in patients on chronic *hemodialysis. Nephrology,* (Carlton) 10(1): 15-20.

Vazquez, I. Valderrabano, F. Fort, I. Jofre, R. Lopez-Gomez, J. M. and Moreno, F. 2004. Differences in health-related quality of life between male and female hemodialysis patients, *Nefrologia,* Vol.24, pp. 167-178.

Zadra, A., Pilon, M., and Donderi, D. C. 2006. Variety and intensity of emotions in nightmares and bad dreams. *J. Nerv. Ment Dis.,* 194(4):249-254.

****