

Prevalence of Depression among Haemodialysis Patients in Public Sector Hospital Settings of Islamabad

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Abstract

The prevalence of psychiatric disorders in patients is a very common issue that often goes neglected especially in public sector hospital settings in Pakistan. Sometimes, physical disability may cause stress in patients leading to mental disorders, but somatic symptoms that lead to a referral to medical and surgical departments may be a manifestation of anxiety or depressive states and have no basis in organic pathology. Any physical illness accompanied by depression may result in complications such as complicated clinical presentation, a poor response to treatment, and, frequently, unnecessary investigation and referral to other departments of the hospital are results of depression that takes place alongside any physical illness.

Objective

The main goal of this study is to assess depression in dialysis patients in public sector hospital settings. A small number of patients' data is recorded due to confidentiality barriers presented by hospitals.

Measurement

A cross-sectional study design is used to carry out this study and to interpret the results. Validated PHQ 9 questionnaires were distributed among the subjects and data were collected at one time.

Conclusion

The prevalence of depression is common in public sector hospital settings that can be a manifestation of poor facilities, socio-economic status, family support, and age factor. Better health facilities and patient care at hospitals and support from families can have better outcomes to fight depression.

Keywords—Haemodialysis, Depression, Dialysis, Chronic Kidney Disease.

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CHAPTER 1

1. Introduction to CKD and Dialysis

Chronic Kidney Disease it is a disease that is defined by gradual loss of functioning of the kidney over time, it may be a month or more than month up to years depends on the complication. At the start of the disease the symptoms do not appear however, with the passage of time the symptoms begin to appear e.g. confusion, loss of appetite, vomiting, feeling tired, and leg swelling. Other inducing disease including anemia, bone disease, high blood pressure, and increased risk of heart disease.

1.1. Stages of CKD

Normal rate of glomerular filtration is ≥ 60 ml/min/1.73 m². A person having GFR equal to or greater than stated earlier is considered is normal with no chronic kidney disease, if the kidney is functioning normally. While the people having low glomerular filtration rate (<60 ml/min/1.73 m²) for about three months or more than that are considered to be having chronic kidney disease. The presence of protein in the urine of a patient is observed is independent marker for deteriorating the function of kidney and worsening of cardiovascular disease. Therefore, if protein is losing in the urine, British guidelines add the letter "P" to the stage of chronic kidney disease

- **Stage I:** A little reduced function: impairment of kidney with usual or comparatively increased glomerular filtration rate (≥ 90 ml/min/1.73 m²) and albuminuria persistently
- **Stage II:** Slight decrease in glomerular filtration rate (60–89 ml/min/1.73 m²) with kidney impairment
- **Stage III:** Moderate decrease in glomerular filtration rate (30–59 ml/min/1.73 m²)
- **Stage IV:** Severe decrease in glomerular filtration rate (15–29 ml/min/1.73 m²), Preparation for kidney replacement therapy
- **Stage V:** Well-known failure of kidney and glomerular filtration rate <15 ml/min/1.73 m², permanent replacement of kidney therapy

1.2. Chronic Kidney Disease in Pakistan

The epidemiology of CKD and its risk factors are not well studied in Pakistan, and very few hospital-based studies have been performed in the past. These studies have shown that Diabetes Mellitus and Hypertension are the main causes of CKD in urban areas while CKD of unknown etiology, glomerulonephritis, and kidney stones was prevalent in the rural areas. ^[2]

1.3. Management of CKD

The main focus of therapy is to slow down or stop further progression of chronic kidney disease aside from controlling other related risk factors. Treatment of the original disease and blood pressure control are the wide-ranging principles of management

2. Dialysis

It is a technique that is used for kidney's patient. It works by the same principal of kidney that perform renal function by removing waste material from the blood by specific mechanism called diffusion. It maintains fluid balance by removing excess water using ultrafiltration technique. The waste material and excess water diffuse into dialysis fluid.

3. Depression

- The WHO has enlisted depression in chronic disease that occurs gradually and is considered as 2nd most prevalent disease that is economically problematic. Over the next ten years it will spread globally with increased rate.^[3]
- Normally people having depression with other psychiatric or medical illness (compound depression) is difficult to treat is compared to people having depression with no other complications.^[4]
- Using different assessment tools, research explain that depression is very common psychiatric illness that is mostly found in End-stage Renal Diseases (ESRD), while, its occurrence is different in different population..^[5]
- Sometime a patient may face stressful situation continuously in their daily life three times or more than that, which is enough to cause depression.
- The patients having good support socially and greater religious involvement are generally less depressed

4. Diagnostically Important BehavioralSymptoms

- Self-injury.
- Substanceabuse.
- Compulsive or ritualisticbehavior.
- Reducedproductivity.
- Socialwithdrawal.
- Avoidantbehavior.
- Interpersonalconfrontation.
- Angerattacks.
- Cryingspells.
- Psychomotor retardation oragitation.

Psychiatric referral must be made on immediate base, upon questioning the patient about his plans and suicidal thoughts.

- Treatment with antidepressants combinedly
- Cognitive behavioral therapy often comes up with better success than medication treatment
- Our study aimed to investigate sociodemographic factors and prevalence of depression in HD pts on the one hand and the relationship between depression and quality of life on the otherhand.

End-Stage Renal Failure and Depression

- The patient with ESRD is more prone to depression. 100% prevalence rate depends on the population that is being analyzed.
- Instead of significant occurrence of depression and rate of morbidity, a lot of patient remain untreated and undiagnosed. An important part of somatic complaints related with chronic kidney disease- sleep disorders, weight, and fatigue may simulate symptoms of depression.^[6]
- As compared to normal people patient with chronic kidney disease are at a greater risk to develop suicidal thoughts especially people of aged over 75 years
- Some research inspected that the treatment of depressive patient with chronic kidney disease. Efficacy has credited to CBT (cognitive behavioral therapy) in term of compliance to therapy and managing the symptoms of depression in those patient having chronic kidney disease. Cognitive behavioral therapy is suggested as alternate therapy.

Questions to ask the patients by the professionals for diagnosing depression

Have you experienced any of the following?

- Constant thoughts of death (Seek professional help immediately)
- Not wanting to eat or wanting to eat more than usual.
- Waking up early in the morning if this had not been your normal routine.
- Sleeping more or less than usual.
- Being tired all the time.
- Easily upset and/or more irritable than usual.
- More difficulty than usual with making decisions.
- Constant sadness, especially when circumstances would lead most people to be happy

CHAPTER 2

5. Depression Assessment Tools

According to recent estimates of WHO, more than 300 million people are suffering from depression and living with it. Chronic illness is one of the major factors causing depression. One study shows that one-third of patients with a chronic illness like end-stage renal failure diabetes cancer etc. will show depression symptoms. But although it is becoming the leading cause of globally ill patients, still its diagnosis and treatment is a challenge for us.

It is very difficult to diagnose depression. Usually, ICD 11 and DSM 5 are used for clinical diagnosis of depression. There are more than 280 questionnaires developed in the last 8 decades for the screening of diagnosis according to research in 2006. As you can see there is no shortage of assessment questioners, but the main part is a selection of questionnaires that which questionnaire we should use for our research. The most used questioners are the following:

- **Beck Depression Inventory BDI** is used for assessment of the severity of depression from age 13 to 80 and it consists of 21 questions and takes 20 minutes to complete.
- **Patient Health Questionnaire PHQ 9** is a self-report to measure the severity of Depressive symptoms it takes only 5 minutes.^[7]
- **Hamilton Depression Rating Scale HAM-D** and called as HDRS and HRSD. It also consists of 21 items but the assessment is made on the first 17 questions. It takes 15 to 20 min.
- **Quick Inventory of Depressive Symptomology-self report QIDS-SR** there are sixteen measures for depression symptoms assessment in patients from age 18 to older and takes 5 to 7 min.
- **Center for Epidemiological Studies Depression Scale CES-D** first it was used for the general population but now is also used for depression patients screening.
- **EQ -5D** is a standardized but not a disease-specific questionnaire
- **The hospital anxiety and depression scale HADS** is also widely used for depression and anxiety assessment and it consists of fourteen items 7 about anxiety and seven about depression.

6. Background and Introduction to PHQ 9

In the early 1990s to diagnose the common types of mental disorders like anxiety, alcohol, eating, somatoform, and depressive disorder the Primary Care Evaluation of Mental Disorders PRIME- MD instrument was developed. To use this tool a 27 items questions should be completed by patients for primary screening and additional questions are asked by physicians about items that were positive in primary screening. But this process was two-stage and took five to six minutes of the physician even without diagnosis and 11 to 12 minutes in patients with

mental diagnosis. This led to the limitation of this instrument because of the very difficult and busy routine of physicians.

Therefore, for the large setting and large sample studies new version of PRIME-MD was developed and validated which is called Patient Health Questionnaire PHQ in general and PHQ9 depression scale. The original PRIME-MD is rarely used, and it is only considered important historically.^[8]

Now a day's mostly PHQ 9 is used in research studies and practice. it is used to assess 12 different emotional and mental disorders. The results obtained from PHQ9 are used to diagnose depression according to the criteria of DSM -IV. In 1990 Dr. Robert J. Spitzer, B.W. Williams Dr. Janet, Dr. Kurt Koneke, and colleagues from the University of Columbia developed PHQ general and PHQ 9 was developed in 1999 with the help of a grant from Pfizer.

PHQ 9 is widely used in different countries as a depression screening tool and translated into different languages according to each country's feasibility. According to a study PHQ, 9 has been **translated into 49 different languages** including **English French, and Urdu**. It is not validated in all these languages but when few studies were performed in different languages validity the results proved that it is still valid for measuring or assessment of diagnosis. In Canada, HR PRO translated the PHQ-9 into French and performed studies and compared the French version with English and the results showed minor difference which did not affect the overall score.^[9]

7. Validity and Reliability

To validate the PHQ 9 a study was performed on 6000 patients in 8 clinical settings and results were compared against interviews by mental health professionals in 580 patients. PHQ 9 has a **sensitivity and specificity of 88 percent**. The correlation between PHQ 9 questionnaire results and mental health professionals interviewed results was 0.84. These results confirmed the validity and reliability of PHQ9.^[10]

In another study, the PHQ 9 questioner's characteristics were compared with DSM -IV diagnosis with a specialized psychiatrist as a reference standard. The results of this study showed that as a brief questionnaire PHQ 9 has excellent validity and reliability for severe depressive symptoms measurement. But it should only be used for screening, not for final diagnosis because it has a low positive predictive value for diagnosis.^[11]

A comparative study was performed between patient health questionnaire PHQ 9 and HAD. The HADS-D and PHQ-9 demonstrated validity, reliability, convergent, and responsiveness to change. However, they differed considerably in how they categorized severity. Given that, treatment decisions are made based on severity.^[12]

8. Purpose of the Study

The purpose of this study is to investigate the prevalence of depression in patients with kidney failure and Chronic Kidney Disease in public sector Hospitals of Islamabad. The prevalence of depression in various age groups, clinic setting factors, and major risk factors are also part of the study.

9. Methodology

We used a cross-sectional study design to carry out this study and to interpret the results. Validated PHQ 9 questionnaires (Fig 1) were distributed among the subjects and data were collected at one time. Two public sector hospitals were included at this stage, FGSH Poly Clinic, and Benazir Bhutto Hospital. Moreover, due to language and literacy barriers, we asked questions ourselves and explained them to the patients for better understanding.

Cross-sectional studies are carried out at a one-time point or over a short period. They are usually conducted to estimate the prevalence of the outcome of interest for a given population, commonly for public health planning. Data can also be collected on individual characteristics, including exposure to risk factors, alongside information about the outcome. In this way, cross-sectional studies provide a 'snapshot' of the outcome and the characteristics associated with it, at a specific point in time.

CHAPTER 3

Case

StudiesCase

Study No. 1

Patient Demographics

- Name: WaheedAkhtar
- Age: 44years
- Gender:Male
- D/O Admission:24-10-18
- Weight: 72kg
- Height: 5'8"

Chief complaint

The patient is suffering from renal failure; he is on dialysis for the past 8 years and dialysis is done 2 times a week.

Past Medical History

The patient is a case of Hypertension, AVN (avascular necrosis), and receives dialysis treatment for about 8 years. He had his right renal transplant that took place 12 years ago but was rejected after 2 years. The patient is not taking anti-coagulants and experienced nose bleeding 2 days ago.

Family History

The Father of the patient suffered from CVA (cerebrovascular accident) and hypertension runs in family.

Socio economic status

Lower class

Past medication history

Deltacortril, dial, concor, **Zoloft** are used by the patient in past.

Lab Reports

- Prothrombin:19.3sec
- APT: 37.1sec
- Albumin: 3.5 g/dl
- Ca: 6.3mg/dl

- Alkaline Phosphate:8.4u/l

Patient's Dialysis Report

A patient receives dialysis 2 times a week. Dialogue P is used for dialysis. A patient receives treatment through AV Fistula access.

Post Assessment

The patient is satisfied with the course of therapy; however, he is frequently under feelings of sadness, and gloom.

Depression Assessment

The patient's score is **18** and is a case of moderately severe depression.

Case Study No. 2

Patient demographics

- Name: AyeshaSafdar
- Age: 38years
- Gender:female
- D/O Admission:19-11-2002
- Weight:65kg
- Height:156cm

Chief Complaint

- A patient has been suffering from End-Stage Renal disease and is on dialysis since2001.

History of present illness

- The patient underwent sudden high blood pressure after childbirth in 2001 and suffered renal failure.

Past medical history

- The patient's Biopsy report showed dead nephrons. Moreover, the patient gave the history of a kidney transplant in 2012 that was rejected by her body in 14days.
- The patient was reported Hep C+ 5 years after dialysisstarted.
- Patient suffered from ischemic heart disease in2010

- The patient got epilepsy in 2015.

Family history

- The patient's sister died from renal failure due to high blood pressure.
- Hypertension runs in family.

Past Medication History

- The patient has been on multiple drugs for a long time for hypertension, epilepsy, and ISH besides dialysis.

Lab Reports (Oct 2018)

- Calcium: 7.2mg/dl
- Rfts
- Urea: 82mg/dl
- Blood Urea Nitrogen (BUN): 38.3mg/dl
- Creatinine: 8.9mg/dl PTH: 1965pg/ml
- Sodium: 144mmol/l
- Potassium: 5.7mmol/l
- Chloride: 109mmol/l
- Hepatitis Bs antibody is positive 34.9mlU/ml Treatment sheet
- Tab Ioprin 75mg 1*OD
- Tab Lowplac 75mg 1*OD
- Tab Lipiget 20mg
- Tab Nitromint 2.5mg 1*BD
- Tab Inderal 10mg 2*BD
- Tab Phostat 2*TD
- Cap Risek 40mg 1*OD
- Tab Bon one 0.5mg 1*OD Inj venofer 100mg in 100ml N/S IV over 1 hour once weekly
- Tab Epival 500mg*BD
- Tab Zolof 50mg*1/2 tab*OD
- Inj vancomycin 1g in 100ml N/S IV slow once monthly
- Tab Calsan-d1+0+1
- Inj one alpha

Patient's Dialysis Report

- Patient receives dialysis treatment three times/week
- Machine: Dialog34
- Vascular access: AVfistula
- Heparin IV Bolus: 2000units
- Infusion 1000 units/hour
- Blood pressure, pulse, Blood filtration rate, temperature, UFR/hr, dialysis flow is monitored from time to time

Post Assessment

The patient is continuously receiving dialysis treatment and is satisfied with her course of therapy. Her blood pressure is under control. But strict adherence to therapy is required to achieve a better outcome, otherwise, consequences can be unfavorable.

Depression Assessment

The patient's score is **17** and is a case of moderately severe depression.

Case Study No. 3

Patient demographics

- Name: KhalidNaseer
- Age: 55years
- Gender:male
- D/O Admission:24-05-2019
- Weight:71kg
- Height:156cm

Chief Complaint

On maintenance dialysis for 6 months.

History of present illness

The patient is suffering from diabetes mellitus for 2.5 years and hypertension for 3.5 years is secondary to DM and HTN.

Past medical history

No past surgical or medical history, however, the patient-reported substance abuse in past.

Family history

Married for 20 years, has 2 daughters, prisoners and has been in jail for 6.5 years

Past Medication History

The patient has been on multiple drugs for a long time for hypertension and diabetes besides dialysis.

Socio Economic Status

The patient's socio-economic condition is poor.

Lab Reports

- Calcium: **7.2mg/dl**
- Rfts
- Urea:**89mg/dl**
- Blood Urea Nitrogen (BUN): **38.3mg/dl**
- Creatinine:**9.9mg/dl** **PTH: 1850pg/ml**
- Sodium:144mmol/l
- Potassium: 5.7mmol/l
- Chloride: 109mmol/l
- Hepatitis C Ab positive

Treatment sheet

- Tab Lowplat 75mg1*OD
- Tab lipiget20mg
- Tab phostat2*TD
- Tab Ganaton1*OD
- Cap Risek 40mg1*OD
- Tab Bon one 0.5mg1*OD
- Injvancomycin
- Inj epokin 4000IU twice-weekly Patient's DialysisReport
- Patient receives dialysis treatment two times in aweek
- Machine: Dialog34
- Vascular access: AVfistula
- Heparin IV Bolus: 2000units
- Infusion 1000 units/hour

- Blood pressure, pulse, Blood filtration rate, temperature, UFR/hr, dialysis flow are monitored from time totime.

Depression Assessment

The patient's score is **24** and is a case of severe depression.

Case Study No. 4

Patient demographics

- Name: ZeeshanIkram
- Age: 26years
- Gender:male
- D/O Admission:12-07-2019
- Weight:68kg
- Height:145cm

Chief Complaint

On maintenance dialysis for 1 month.

History of present illness

The patient is suffering from HTN. On dialysis, the first subclavian was used for vascular access but now radio cephalic fistula is used.

Past medical history

History of hernioplasty but no other medical history

Family history

Married for 2 years and has one daughter and have the lower socioeconomic status

Lab Reports

- sodium:133mEq/L
- chloride:100mEq/L
- Rfts
- Urea:89mg/dl
- Blood Urea Nitrogen (BUN): 38.3mg/dl
- Creatinine:9.9mg/dl PTH: 1850pg/ml

Treatment sheet

- Tab Lowplat 75mg1*OD
- Tab lipiget20mg
- Tab phostat2*TD
- Tab Ganaton1*OD
- Cap Risek 40mg1*OD
- Tab Bon one 0.5mg1*OD
- Injvancomycin
- Inj epokin 4000IU twice-weekly Patient's DialysisReport
- Patient receives dialysis treatment two times in aweek
- Machine: Dialog34
- Vascular access: radio cephalicfistula
- Heparin IV Bolus: 2000units
- Infusion 1000 units/hour
- Blood pressure, pulse, Blood filtration rate, temperature, UFR/hr, dialysis flow are monitored from time totime.

Depression Assessment

The patient's score of PHQ 9 form is **10**. He has minimal or no depression at all because scores of questions 1 and 2 do not lie in the shaded portion which is a prerequisite to record the case as depression.

Case Study No. 5

Patient demographics

- Name: Zahid Ali
- Age:55
- Gender:male
- D/O Admission:12-04-2019
- Weight:70kg
- Height:160cm

Chief Complaint

On maintenance dialysis for 4 years.

History of present illness

CKD secondary to hypertension, no interdialytic complications

Past medical history

no other medical or surgical history

Family history

Married and have five children all are getting an education but have the lower socioeconomic status

Lab Reports

- sodium: **129mEq/L**
- chloride:97mEq/L
- potassium: 5.05 mEq/L
- Blood Urea Nitrogen (BUN): 38.3mg/dl
- Creatinine:13.6mg/dl PTH: 1850pg/ml
- HepatitisB

Treatment sheet

- Tab Ganaton1*OD
- Cap Risek 40mg1*OD
- Tab Bon one 0.5mg1*OD
- Inj epokin 4000IU twice-weekly Patient's DialysisReport
- Patient receives dialysis treatment two times in aweek
- Machine: Dialog34
- Vascular access: left armAVF
- Heparin IV Bolus: 2000units
- Infusion 1000 units/hour
- Blood pressure, pulse, Blood filtration rate, temperature, UFR/hr, dialysis flow is monitored from time totime

Depression Assessment

The patient's score is **1** and is not suffering from depression at all.

Case Study No. 6

Patient Demographics

- Name:Zobia
- Age: 30years
- Gender: Female
- Body Weight: 40kg
- D/O Admission:01-10-2017

Chief Complaint

A patient has been suffering from hypertensive nephropathy and is on dialysis since 2005.

Past Medical History

The patient was diagnosed with a case of hypertension in 2003. In 2005, she became HCV+ive. On 20th Dec 2005, twice a week dialysis was started here in FGPC Hospital

Family History

No record of family history

Past Medication History

Patient has been on anti-hypertensives for a long time besides dialysis

Lab Reports (03-09-2019)

- Sodium: 130mmol/L
- Calcium: 9.8mg/Dl
- Creatinine: 10.4mg/Dl
- Urea: 113mg/dL
- Vitamin D: 85.22 ng/mL
- Chloride: 105mmol/L
- Hepatitis B antibodies (HBsAb): Reactive >160mIU/mL
- Potassium: 4.9mmol/L

Treatment Sheet

- Tab. Amlocard 5mg (2tabs morning, 1tabevening)
- Tab. Qalsan-D(PO*1tab*TDS)
- Tab. Calibin 0.25mcg(PO*1tab*OD)
- Cap. Risek 40mg(PO*1cap*OD)

- Inj. Venofer 2amp in 50ml N/S IV afterdialysis
- Tab. Lophos(1tab*TDS)
- Tab. Ibertfolic (1tab*PO*OD)
- Inj. Epokine 2000 IU* S/C after dialysis once in aweek
- Inj. Recormon 5000 IU* S/C once weekly
- Tab. Adalat LA 30 (1tab*OD)

Depression Assessment

The patient's score is **19** and is suffering from moderately severe depression.

Case Study No. 7

Patient demographics

- Name: NailaShaheen
- Age: 36years
- Gender:Female
- Registration number:14514
- Gender:female
- D/O Admission:19-11-2007
- Weight:51kg

Chief Complaints

The patient has been suffering from renal failure and is on dialysis since 2007.

Past medical history

She was admitted with complaints of uremic symptoms on November 19, 2007, and had a renal failure for which HD was done carefully after which the patient was stable. Since then her hemodialysis is done twice a week. On 4th September 2018, she suffered from a bacterial infection. Her autoimmune profile showed varied ANA levels. She was treated with medicines and is now stable. No history of HBV or HCV.

Family history

No history of hypertension in the family.

No history of kidney disease in the family.

Lab Findings

Component	Pt LabValues
Creatinine	9.8mgdl
Urea	13.8mg/dl
Plateletcount	169000/mm3
Hemoglobin	9.7g/dl
Hematocrit	33.7%
WBCCount	4700/mm3
RBC Count	3.92×10^6 /ul
MCV	91fL
MCH	28.4pg

Treatment sheet

- Tab Adalat 30mg1xOD
- Inj Venofer 100mg Twice/Month duringhemodialysis
- Inj Recormon 2000u 5/c Twiceweekly
- Inj Vancomycin 1g diluted in 100mlN/SxIV
- Tab Lophos1xTDS

Patient's Dialysis Report

- Patient receives dialysis treatment three times/week
- Machine: Dialog34
- Vascular access: AVfistula
- Blood pressure, pulse, Blood filtration rate, temperature, UFR/hr, dialysis flow is monitored from time totime

Post Assessment

The patient is continuously receiving dialysis treatment and is satisfied with her course of therapy. Her blood pressure is under control. But strict adherence to therapy is required to achieve a better outcome, otherwise, consequences can be unfavorable.

Depression Assessment

The patient's score is **16** and is suffering from moderately severe depression.

Case Study No. 8

Patient demographics

- Name: AbdulRauf
- Age: 60years
- Gender:male
- Registration number:2872
- D/O Admission:25-09-2017
- Weight:60kg

Chief complaints

The patient is suffering from chronic kidney disease and has end-stage renal failure, so hemodialysis is done thrice a week since2017.

History of present illness

The patient poses with complaints of generalized, decreased balance, weakness,secondary to dialysis treatment 3 days per week. The patient was admitted to the hospital onSeptember 6th,2017 due to extreme illness and diagnosed with end-stagerenalfailure. The patient has been getting dialysis treatment since the ESRD diagnosis. One year after hemodialysis treatment started the patient became HCV+ive. Comorbidities include depression, Type 2 DM, HTN, diabetes, and neuropathy. The patient also reports frequent UTI's since going ondialysis.

Family history

Hypertension runs in family.

No history of renal disease in a family.

Lab Reports:

Component	Pt LabValues
Creatinine	8.9mgdl
Urea	11.4mg/dl
Plateletcount	206000/mm3
Hemoglobin	12g/dl
Hematocrit	40.7%

WBCCount	5700/mm ³
RBCCount	3.92x10 ⁶ /ul
MCV	86.1fL
MCH	27.4pg
Calcium	9.6mg/dl

Treatment plan

- Tab. Adalat LA 30 (1tabxOD)
- Inj. Epokine 2000 IU S/C once in a week
- Tab. Lophos(1tabxTDS)
- Tab Lipirex (10mg1POxHS)
- Tab RISP (1mg half tabletPOxHS)
- Inj Insulin (6IU thrice aday)
- Cap Risek (40mg 1POxOD beforemeals)
- Tab Nuberol Forte (1xPOxBD)
- Tab Neuromel(1POxBD)
- Tab Concor (2.5mg 1XPOxOD) Patient's DialysisReport
- Patient receives dialysis treatment three times/week
- Machine: Dialog34
- Vascular access: AVfistula
- No. of needles used:2
- No. of pricks:2
- Heparin IV Bolus: 2000units
- Infusion 1000 units/hour
- Blood pressure, pulse, Blood filtration rate, temperature, UFR/hr., dialysis flow is monitored from time totime

Post Assessment

The patient is continuously receiving dialysis treatment and is satisfied with her course of therapy. Her blood pressure is under control. But strict adherence to therapy is required to achieve a better outcome, otherwise, consequences can be unfavorable.

Depression Assessment

The patient's score is **8** and is suffering from mild depression.

Case Study No. 9

Patient demographics

- Name: AzamSultana
- Age: 73years
- Gender:female
- Registration number:2242
- D/O Admission:20-12-2016
- Weight:59kg

Chief complaints

The patient is suffering from chronic kidney disease and has end-stage renal failure, so hemodialysis is done thrice a week since2016.

History of present illness

The patient was declared to the hospital in December 2016 due to severe illness and was spotted with kidney failure. The patient reports the progression of her disease to end-stage renal disease (ESRD). The patient has been receiving dialysis treatment since the ESRD diagnosis. Comorbidities consist of Type 2 DM, diabetic neuropathy, HTN, and general weakness.

Family history

Hypertension runs in family.

No history of renal disease in a family.

Lab Reports:

Component	Pt LabValues
Creatinine	9.1mgdl
Urea	96mg/dl
Plateletscount	231000/mm3
Hemoglobin	11.5g/dl
Hematocrit	33.7%
WBCCount	6700/mm3
RBCCount	4.01x10 ⁻⁶ /ul
MCV	84.02fL

MCH 28.7pg

Calcium 9mg/dl

Treatment plan

- Tab. Adalat LA 60 (1tabxBD)
- Tab Hydralazine 25mg(TDS)
- Tab Lophos(2xTDS)
- Tab Bone one 0.5mg1xOD)
- Tab.Lasix40mg(1xOD)
- Tab Loplet 75mg(1xOD)
- Inj Neurobion afterdialysis
- Inj Venofer 100mg (1M 100ml N/S IV over 1 hour) onceweekly.

Patient's Dialysis Report

- Patient receives dialysis treatment three times/week
- Machine: Dialog34
- Vascular access: AVfistula
- No. of needles used:2
- No. of pricks:2
- Heparin IV Bolus: 2000units
- Infusion 1000 units/hour
- Blood pressure, pulse, Blood filtration rate, temperature, UFR/hr, dialysis flow are monitored from time totime.

Post Assessment

The patient is continuously receiving dialysis treatment and is satisfied with her course of therapy. Her blood pressure is under control. But strict adherence to therapy is required to achieve a better outcome, otherwise, consequences can be unfavorable.

Depression Assessment

The patient's score is 4 and is not suffering from depression.

Case Study No. 10

Patient Demographics

- Name: MukhtarAli
- Age: 47years
- Gender:Male
- Weight:75kg

- Height: 5'8"

Chief complaint

The patient is suffering from end-stage renal failure for the past 6 years and is on dialysis.

Past medical history

The patient is also suffering from hypertension and diabetes for the last 10 years the patient has never had a transplant. The patient felt dizzy a week ago.

Family history

A patient has no family history of hypertension, diabetes, or kidney problems.

Socioeconomic status

Middle class

Past medication history

Amlodipine, omeprazole, insulin therapy

Lab Reports

- APT 36.1s
- Albumin 3.6g/dl
- Ca 6.4mg/dl
- Alkalinephosphate 8.7u/dl
- Urea 83mg/dl
- Blood Urea Nitrogen (BUN) 39.3mg/dl
- Creatinine 8.9mg/dl
- PTH 1969pg/ml
- Sodium 144mmol/l
- Potassium 5.7mmol/l
- Chloride 109mmol/l

Treatment

- Tabloprin
- CapRisek
- TabCalsan-d
- *Inj one alpha*
- Insulin
- Tabzoflex

Patient's dialysis report

The patient is receiving dialysis 2 days a week. Patient receives treatment via AV Fistula

Post assessment

The patient is satisfied with the dialysis treatment but sometimes does not feel at ease and has disturbing thoughts.

Depression Assessment

The patient's score is **17** and is a case of moderately severe depression.

Case study No. 11

Patient Demographics

- Name: RubinaAslam
- Age:50years
- Gender: Female
- Weight: 70kg
- Height:5,4''

Chief complaint

The patient is suffering from end-stage renal failure for the past 3 years and is on dialysis.

Past medical history

The patient is also suffering from hypertension for 5 years, the patient never had the transplant. The patient had drug-induced nephrotoxicity.

Family history

The patient has a family history of hypertension, diabetes. The patient's mother is suffering from hypertension.

Socioeconomic status

Middle class

Past medication history

Patient often used neomycin for minor skin problems which lead to nephrotoxicity, avil, valsartan

Lab Reports

- APT 35.1s
- Albumin 3.8g/dl
- Ca 6.7mg/dl
- Alkalinephosphate 8.9u/dl
- Urea 87mg/dl

- Blood Urea Nitrogen (BUN) .40mg/dl
- Creatinine 9mg/dl
- PTH 1969pg/ml
- Sodium 144.2mmol/l
- Chloride 108mmol/l
- Potassium 5.6mmol/l

Treatment

- Tabloprin
- Tabzirtex
- Tabcalsan
- Tabepival
- Tabzoflex
- *Inj. epokine*

Patient's dialysis report

The patient is receiving dialysis 2 days a week. Patient receives treatment via AV Fistula

Post assessment

The patient is satisfied with the dialysis treatment, but the patient is suffering from depression.

Depression Assessment

The patient's score is **18** and is a case of moderately severe depression.

Case Study No. 12

Patient demographics

- Name: Hina Farooq
- Age: 42years
- Gender:female
- D/O Admission:13-11-2010
- Weight:59kg

Chief complaints

The patient is suffering from chronic kidney disease and has end-stage renal failure, so hemodialysis is done thrice a week since 2010.

Past medical history

She was admitted with complaints of uremic symptoms on November 11, 2010, and had a renal failure for which HD was done carefully after which the patient was stable. Since then her hemodialysis is done twice a week. No history of HBV or HCV.

Family history

- No history of hypertension in the family.
- No history of kidney disease in a family.

Treatment sheet

- Tab Adalat 30mg 1xOD
- Inj Venofer 100mg Twice/Month during hemodialysis
- Inj Recormon 2000u 5/c Twice weekly
- Inj Vancomycin 1g diluted in 100ml N/SxIV
- Tab Lophos 1xTDS

Patient's Dialysis Report

- Patient receives dialysis treatment three times/week
- Machine: Dialog 34
- Vascular access: AV fistula
- No. of needles used: 2
- No. of pricks: 2
- Heparin IV Bolus: 2000 units
- Infusion 1000 units/hour
- Blood pressure, pulse, Blood filtration rate, temperature, UFR/hr, dialysis flow is monitored from time to time

Post Assessment

The patient is continuously receiving dialysis treatment and is satisfied with her course of therapy. Her blood pressure is under control. But strict adherence to therapy is required to achieve a better outcome, otherwise, consequences can be unfavorable.

Depression assessment

The patient score is **14** and is suffering from moderate depression.

Case Study No. 13

Patient Demographics

- Name: Sarwat SajidKhan
- Age: 45Years
- Gender:Female
- Weight: 69kg
- Serial No:035
- First HD:31-10-2016

Chief Complaint

The patient is suffering from CKD and HD is done twice weekly for the past 4 years.

Past Medical History

The patient was declared to the Federal Government Polyclinic Hospital in October 2016 due to severe illness and diagnosed with CKD for which HD was carefully done. After dialysis patient was stable since then her HD is done twice a week. One year after HD treatment started the patient became HCV+ive.

Family History

No history of HTN in family

No history of renal disease in the family

Physical Examination

Inflammation in feet and lower legs

Feeling of being tired around the past several weeks

Treatment

- Inj. Record one 5000IU twice weekly
- Inj. Methycobal I/V once a week
- Inj. In drop-D PO* once weekly
- Inj. Venofer 1 Ampule I/V once weekly
- Tab. Adalat 30mg 1*OD
- *Tab. Concor 2.5mg 1*OD*
- Tab. Lophos 2*TDS

Patients Dialysis Report

- A patient receives dialysis two times/week.
- Machine: Dialog 33
- Needles: 16G
- Cannulation: Easy
- Vascular Access: AV fistula
- No of needles used: 2
- No of pricks: 2
- Heparin IV Bolus: 3000 units
- Infusion: 1000 units/hour
- BP, Pulse Rate, Blood Filtration Rate, Temperature, UFR/hr. are monitored from time to time.

Post Assessment

The patient is satisfied with dialysis and showed good health with decreases creatinine levels. Her blood pressure is controlled.

Depression Assessment

According to the PHQ questionnaire, the patients' score is 8 and is suffering from mild depression.

Case Study No. 14

Patient Demographics

- Name: Muhammad Ibrahim
- Age: 70 Years
- Gender: Male

- Weight: 73kg

Chief Complaint

The patient is suffering from CKD and has ESRD, so HD is done thrice a week since 2016.

Past Medical History

The patient was declared to the hospital in January 2016 anticipated severe illness and diagnosed with renal failure. The patient reports the development of his disease to ESRD for which HD was carefully done. A patient has been collecting HD treatment since the ESRD diagnosis. Comorbidities consist of HTN and Diabetes Mellitus Type 2.

Family History

HTN runs in family

No history of renal disease in the family

Lab Reports

Normal values are recorded

Treatment

- Inj. Neurobion afterdialysis
- Inj. Venofer 100mg (1M 100ml N/S IV over 1 hr.) once weekly
- Tab. Adalat LA 60mg 1*BD
- Tab. Lasix 40mg 1*OD
- Tab. Lophos 2*TDS
- Tab. Bone one 0.5mg 1*OD

Patients Dialysis Report

- A patient receives dialysis three times/week.
- Machine: Dialog34
- Needles: 16G
- Cannulation: Easy
- Vascular Access: AVfistula
- BP, Pulse Rate, Blood Filtration Rate, Temperature, UFR/hr. are monitored from time to time.

Post Assessment

The patient is continuously receiving HD treatment and is satisfied with his course of therapy. His blood pressure is under control but still, strict adherence to therapy is required to achieve a better outcome.

Depression Assessment

According to the PHQ questionnaire, the patient's score is **6** and is not suffering from depression.

Case Study No. 15

Patient Demographics

- Name: SalmaBibi
- Age: 42Years
- Gender:Female
- Weight: 68kg
- Height:5'2

Chief Complaint

The patient is suffering from ESRD and has been on HD for the past 4 years. Also presents together with tiredness, nausea, and constipation.

Past Medical History

- ESRD secondary toHTN
- GERD
- HTN
- Gestational Diabetes 12 Yearsago
- SecondaryHyperthyroidism
- Anuria
- Anemia

Past Surgical History

- Cesarean section 12 yearsago
- AV fistula creation 5 years ago(failed)
- AV graft creation 3 years ago (failed)
- Tubal ligation 10 yearsago

Family History

- Father died of MI at age of60.
- No siblings and has a 12-year-old son in goodhealth.
- Mother deceased due to breastcancer.

Socioeconomic Status

- Married, lives with husband and 12 years oldson.
- Smokes 1 or 2ppm
- Denies coffee consumption.

Physical Examination

- Feeling of being tired and weak over the past severalweeks
- Constipation, nausea, and heartburn
- Swelling in feet and lowerlegs

Lab Reports

- Calcium 7.1mg/dl
- Phosphorus 10.9mg/dl

Treatment

- Furosemide 80mg POdaily
- Omeprazole 20 mg POdaily
- Metoprolol tartarate 50 mg PO BID
- Lisinopril 20 mg POdaily
- Calcium acetate 667 mg three caps PO TID withmeals
- Nephro-Vite POdaily
- Ferrous sulfate 325 mg POTID
- Calcium carbonate POPRN
- Epoekin alfa 10,000 units IV three times weekly with dialysis for 3months
- Iron sucrose 50 mg IV once weekly atdialysis
- Docusate 100 mg PO daily PRN (means asneeded)

Patients Dialysis Report

A patient receives dialysis three times/week., Machine: Dialog 34, Vascular areas: AV fistula BP, pulse, blood filtration rate, temperature, UFR/hr are monitored from time to time.

Post Assessment

The patient is satisfied with dialysis and showed good health with the decrease in creatinine level. Her blood pressure is controlled.

Depression Assessment

According to the PHQ questionnaire, the patient's score is **8**, and is suffering from mild depression.

CHAPTER 4

10.Results Interpretation

From our study, depression is a prevailing disorder in patients on dialysis. It can be assessed by this study that major factors leading to depression include age factor, gender, duration of disease, clinical facilities, and setting, socioeconomic status, patient's moral support from family and friends to fight against the disease. The results can be viewed in table 1.

11.Discussion

A majority of the patient evaluated was suffering from depression. Most of them are treated with anti-depressants and anxiolytics as can be seen in the bold portions of their treatment sheets.

Common drugs used are **Zoloft and epival**. Zoloft is a selective serotonin reuptake inhibitor and is used for depression treatment. Epival is used in Mania treatment and bipolar disorder treatment.

Patients' lab reports show that prothrombin time is high in most of the cases. This accounts for high phosphorus levels in the blood. The higher the phosphorus level, there is an increase in prothrombin release that causes coagulation disorders. To prevent the consequences of secondary hyperparathyroidism, most patients are on **low plat clopidogrel**. Because of the increase in coagulation disorders, many patients are **receiving Concor which is a beta-blocker** that helps maintain blood pressure.

Epokine inj is the common mode of treatment of anemia in these patients. Discussion with patients proved that a fall in their blood hemoglobin levels is a major concern for them. This can be the cause of their health issues manifested depression.

Major Factors studied that lead to depression

Age Factor and Duration of Disease

Subjects belonging to all age groups were included in the study. It is interpreted that patients who suffered from kidney failure at a young age are more likely to have depression while the patients above age 50 are less likely to suffer from depression. The cause may be the duration of the disease. Patients in the early stages of the disease are more likely to be depressed as compared to the patients who are in this condition for a longtime.

Gender

Gender is not a very strong factor to assess depression, but somehow, it is observed that males are more likely to be depressed as compared to females in our social setup because of financial responsibilities toward their family. They on account of their disease are unable to perform

their jobs to make daily wages and earn for their families. This can be the cause of hypertension and depression.

Socio Economic Status

Subjects with good socio-economic conditions were less or not depressed at all as compared to the ones with poor socio-economic status irrespective of age factor. Patients with dialysis at their young ages were reported with no depression owing to their better socio-economic status.

Clinical Facilities and Settings

The availability of facilities in clinical settings is also a factor that affects patients' mental health status. Settings with better nursing staff and good doctor-patient interaction, counseling from medical staff are less likely to be depressed because of clinical support.

Patients' support by Family and Social circle

As we know that our culture and norms tend to bind us in close relations, so a person seeks more attention from family and friends in the hour of crisis. Patients with better family and friends support are less likely to be depressed as compared to the ones with less or no family support at all. Some subjects were abandoned by their families due to their disease condition and they were severely depressed. On contrary, there were also the patients who received better care from family and friends, and they are satisfied and happy with life.

12. Conclusion

From this study, we conclude that most of the patients undergoing dialysis treatment are depressed. Change in the health care quality, the system of treatment, patient counseling and support, financial support clinical revolutions can help deal with such cases.

Limitations of the Study

The study is performed on a very limited number of patients. Major barriers include confidentiality barriers of patients' data from hospitals. Many hospitals refused to share information that caused a halt in our study. Also, communication with most of the patients was not possible due to language barriers. The COVID-19 pandemic situation across the world caused a major obstruction to carry out a study on the large sample population. Having removed these barriers, we can study the topic in more detail and can have better outcomes.

Future Prospects

Over 25 medications have been approved by the FDA for the treatment of major depression and there is strong and increasing evidence about the effectiveness of psychotherapies that can be delivered in primary care or specialty mental health care settings. Effective management of

depression in clinical care requires several steps: detection and diagnosis, patient education and engagement in treatment, initiation of evidence-based pharmacotherapy or psychotherapy, close follow-up focusing on treatment adherence, treatment effectiveness, and treatment side effects. Consistent follow-up is crucial as treatment adherence is a major problem in primary care.

Efforts to improve the management of depression and other common mental disorders in clinical care have focused on screening, education of primary care providers, development of treatment guidelines, and referral to mental health specialty care. Another approach to improve care for patients with depression is to co-locate **mental health specialists** into clinics. The positive approach of the patient's family is also required to change towards the patient. A supporting family will help the patient out of the mental problems that will be good for both. Such an approach can dramatically improve patient satisfaction and health outcomes.

Patient Name: _____

Date: _____

	Not at all	Several days	More than half the days	Nearly every day
1. Over the <i>last 2 weeks</i> , how often have you been bothered by any of the following problems?				
a. Little interest or pleasure in doing things	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Feeling down, depressed, or hopeless	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Trouble falling/staying asleep, sleeping too much	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Feeling tired or having little energy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Poor appetite or overeating	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Feeling bad about yourself or that you are a failure or have let yourself or your family down	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Trouble concentrating on things, such as reading the newspaper or watching television.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Moving or speaking so slowly that other people could have noticed. Or the opposite; being so fidgety or restless that you have been moving around a lot more than usual.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Thoughts that you would be better off dead or of hurting yourself in some way.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. If you checked off any problem on this questionnaire so far, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?				
	Not difficult at all	Somewhat difficult	Very difficult	Extremely difficult
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

PHQ-9* Questionnaire for Depression Scoring and Interpretation Guide

For physician use only

Scoring:

Count the number (#) of boxes checked in a column. Multiply that number by the value indicated below, then add the subtotal to produce a total score. The possible range is 0-27. Use the table below to interpret the PHQ-9 score.

Not at all (#) _____ x 0 = _____
 Several days (#) _____ x 1 = _____
 More than half the days (#) _____ x 2 = _____
 Nearly every day (#) _____ x 3 = _____

Total score: _____

Interpreting PHQ-9 Scores		Score	Actions Based on PH9 Score
Minimal depression	0-4	< 4	The score suggests the patient may not need depression treatment
Mild depression	5-9		
Moderate depression	10-14	> 5 - 14	Physician uses clinical judgment about treatment, based on patient's duration of symptoms and functional impairment
Moderately severe depression	15-19		
Severe depression	20-27	> 15	Warrants treatment for depression, using antidepressant, psychotherapy and/or a combination of treatment.

Fig 1: PHQ-9 Questionnaire for Depression Scoring and Interpretation Guide

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Total number of patients	15
No depression	4
Mild depression	3
Moderately severe depression	7
Severe depression	1

Table 1: Results of the Study

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