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A Prospective and Observational Study of Level of Stress in CKD Patients Who Are Undergoing Hemodialysis

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Abstract
Introduction: *Stress is an unavoidable phenomenon in every aspect of human life. Headache, fatigue, and irritation are some of the stress related symptoms observed in the patients undergoing hemodialysis.*
Aims: *To study the level of stress in hemodialysis patients in government tertiary care hospital.*
Methods: *A prospective observational study was done in Government tertiary care hospital, by observing the 124 hemodialysis patients admitted from, 2018 July to 2018 December.*
Results: *Of the 124 patients in the study, 62.90% were male, and 37.09% were female of all age categories. 45.16% of patients were in stage V and stage 32.25% in stage IV kidney injury. The patients showed co-morbidities like hypertension in 91.12% and diabetes mellitus 83.87% and42.74% were on hemodialysis for more than three years. In social habits, 63.70% were found to be alcoholic, and 58.87% were smokers. Headache was observed in 100% while fatigue in 98.38% of patients. Relationship stress is seen in 79.83% of patients. The level of stress in this study population was found to be moderate stress of 73.38%.*
Conclusion: *It was observed that stress was significantly more in males, and stage V patients. Headache was the common symptom, and the level of stress was moderate in the majority.*
Keywords: *Stress, Chronic Kidney Disease, Perceives stress scale, Hemodialysis.*

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I. Introduction

Stress is defined as "a state of psychological and physiological imbalance resulting from the disparity between situational demand and the individual's ability and motivation to meet those needs. Stress can be either positive or negative: Stress is good when the situation offers an opportunity for a person to gain something. It acts as a motivator for peak performance. Stress is negative when a person faces social, physical, organizational and emotional problems [(1)]. Recently with the increased understanding of the relationship between stress and disease, the role of stress as a mechanism by which ''SES can *get under the skin*" has received a great deal of attention. One growing body of research has focused on allostatic load – the ''wear and tear'' that results from chronic or excessive activation of the stress response [(7)].

Perceived stress can be measured by three popular tools: The Stress Appraisal Measure (SAM), The Impact of Event Scale (IES) and The Perceived Stress Scale (PSS). PSS has been widely used throughout the world and was translated into several languages besides English[(2)].The kidneys play a major role in maintaining the balance of body fluids and regulating blood pressure, among other functions[(5)].CKD is defined as the presence of kidney damage, manifested by abnormal albumin excretion or decreased kidney function, quantified by measured or estimated glomerular filtration rate (GFR), that persists for more than three months[(3)].In the case of severe kidney damage, dialysis might be an option. It is only used for end-stage kidney failure where 85 to 90 percent of kidney function is lost[(4)].The three essential components of hemodialysis are the dialyzer; the composition and delivery of the dialysate; the blood delivery system[(8)].

Dialysis: the treatment uses equipment to clean your blood and do some of the work that healthy kidneys do[(6)].

II. Materials And Methods

A questionnaire was prepared to study the stress among the patients who are undergoing hemodialysis at Government Civil Hospital, Karimnagar. A total of 124 hemodialysis patients were involved in this research. From the total, 46 respondents were female, and 78 respondents were male. Perceived stress scale contains a questionnaire composed of 10 questions about the subject feelings and thoughts during the last month, which is scored from 0-4.

III. Results

Stress is a natural phenomenon during our lifetimes which cannot be escaped. Throughout the lifetime of peoples, thousands of different kinds of stress may be experienced. Depends on several factors the level of stress could vary from intense to minimal. Stress affects a person's physical and emotional well- being, regardless of the level. When your stress levels are out of control, it is important to learn how to recognize it. It is one kind of mental imbalance, low mental satisfactory condition. This study examined the stress in hemodialysis patients. Stress affects physically, mentally and emotionally. The symptoms of stress overload can be almost anything. Everyone experiences stress differently, and in many ways, stress affects the mind, body, and behavior. It has been found in our report that the various symptoms which lead to stress mostly seen in more numbers in males as compared to females. If we carefully observed we would find that the divisions of all the hemodialysis were not equal, out of 124 hemodialysis patients includes 62.90% and 37.09% of male and female respectively. From our lives stress cannot be removed easily. However we should try to minimize it. We can control the effect of stress in us,but we cannot control life stress. The mean age was 52.8710 and standard deviation was 13.80. The median was 58.00 and range was 54.00.

Table 1. Patient Distribution based on age, gender, occupation, co-morbidities, stages of CKD, duration, social habits, reason for stress

S **VARIABLES**		**NO. OF PATIENTS**	**PERCENTAGE(%)**
Age (months)	Up to 25	2	1.61
	26-35	18	14.51
	36-45	29	23.38
	46-55	32	25.80
	56-65	24	19.35
	66-75	19	15.32
Gender	Male	78	62.90
	Female	46	37.09
Occupation	Farmer	18	14.51
	Carpenter	3	2.41
	Labour	15	12.09
	Private employee	6	4.83
	Govt.employee	9	7.25
	Unemployed	34	27.41
	Students	11	8.87
	Housewives	28	22.5
Co-morbidities	Hypertension	113	91.12
	Diabetes mellitus	104	83.87
	Asthma	23	18.54
	CVD	63	50.80
	Dyslipidemia	34	27.41
	Hepatitis	54	43.54
	Thyroid dysfunction	28	22.58
	Obesity	54	43.54
	Seizures	23	18.54
	None	11	8.87
Stages of CKD	I	0	0
	II	0	0
	III	28	22.58
	IV	40	32.25
	V	56	45.16
Duration (years)	Less than1 year	29	23.38
	1-3 years	42	38.87
	More than 3 years	53	42.74
Social habits	Smoking	73	58.87
	Alcohol	79	63.70
	Tobacco chewer	31	25
	Toddy	48	38.70
	None	08	6.45
Reasons for stress	Psychological stress	73	58.87
	Academic stress	25	20.16
	Financial/Economic stress	98	79.03
	Relationship stress	99	79.83
	Future/career growth stress	45	36.29

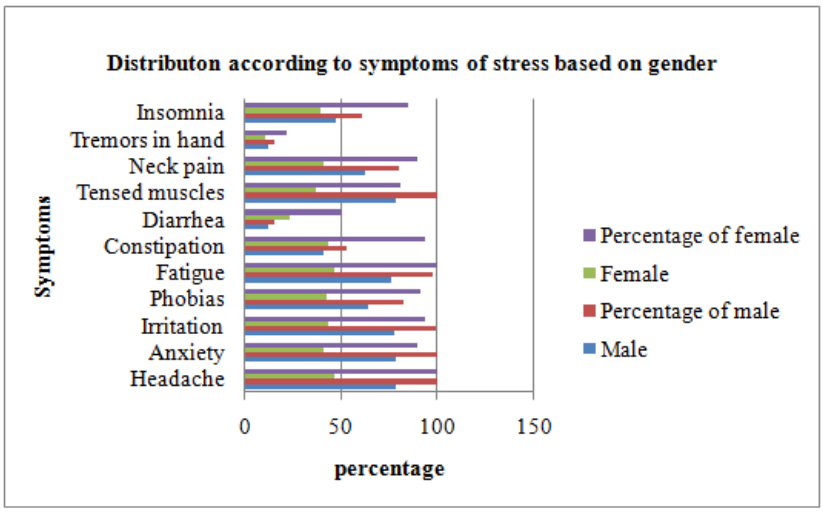

Figure1. Symptoms of stress based on gender

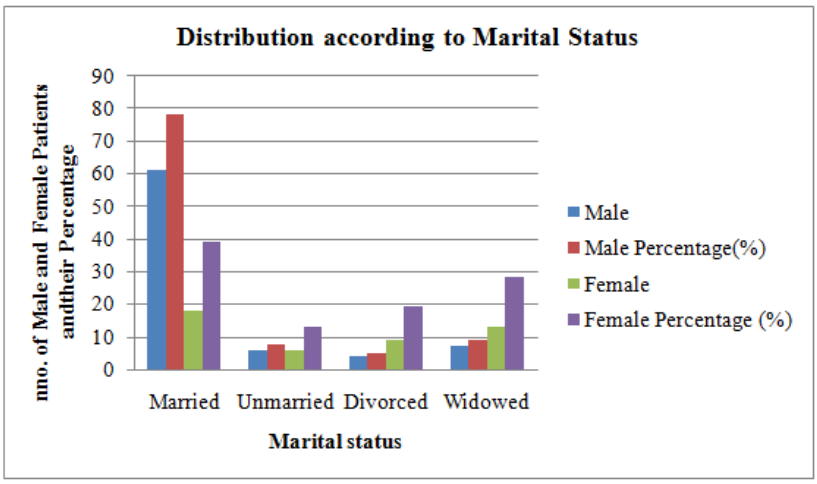

Figure2. Patients based on marital status

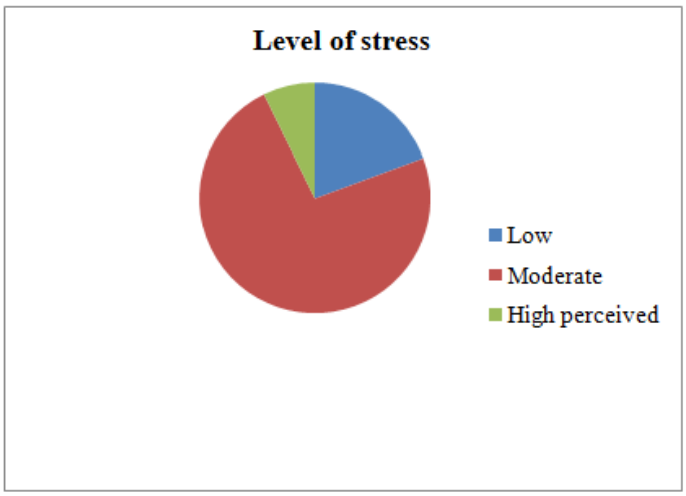

Figure3. Level of stress in hemodialysis patients

IV. Discussion

Kidneys play a major role in maintaining body fluids and regulating blood pressure. The main role of kidneys is homeostasis. Due to environmental or medical factors or malformed from birth kidney damages this may be acute (AKD) or chronic (CKD)[4]. Based on clinical and eGFR data patients were assigned to one of five stages of CKD. Patients were assigned to CKD stages according to Kidney Disease: Improving Global Outcomes (KDIGO) guidelines: CKD 1 with eGFR>90 mL/min, CKD 2 61–90 mL/min, CKD 3 31–60 mL/min, CKD 4 16–30 mL/min and CKD 5 0–15mL/min[10].

The process of removing blood from an artery (in case of kidney injury), purifying it by dialysis, adding vital substances and returning it to a vein is called hemodialysis. It is one of the primary types of dialysis. Dialysis is majorly performed due to disturbed renal functioning like uremic syndrome, hyperkalemia, extracellular volume expansion, acidosis, not responding to medical therapy, creatinine clearance or 10 ml/min/1.73m^2 and bleeding diathesis[9]. Dialysis may be required in both acute and chronic kidney damage treatment[4].

Any intrinsic or extrinsic stimulus that evokes a biological response is known as stress[11]. It is positive when situation offers an opportunity for a person to gain something. It acts as a motivator for peak performance. Stress is negative when a person faces social, physical, organizational and emotional problems[12]. Stress is explained by (Pargman 2006) as "An uncertain reaction to external and internal factors" that means a negative or positive reaction to environmental stimuli[13]. Stress is measured mostly by one of the scale,i.e., Perceived Stress Scale (PSS). PSS contains a questionnaire composed of 10 questions about the subject feelings and thoughts during the last month, which is scored from 0-4[14].

A total of 124 patients were enrolled in our study. All patients had undergone hemodialysis due to psychological (58.87%), relationship (79.83%), academic (20.16%), carrier (36.29%) and financial stress (79.03%). Hence the data indicated people who have undergone hemodialysis had shown the reason mostly relationship and financial stress.

Due to increased use of social media in dailylife proved the relationship stress (Dr. Deepti Bhargava*et al.*)[15].

Of 124 patients 78 (62.90%) were males and 46 (37.09%) were females. The number was more in males for a simple, obvious reason is due to a stereotype that males should emotionally stable in society and mostly to lead their family.This also proved that males are more in number than females who have undergone hemodialysis **(**HarajyotiMazumdar*et al*)[16].

In our study, number of patients were in the age group of 46-55 years (25.80%) which indicates that incidence of stress leading to kidney failure. We observed that most of the patients who have undergone hemodialysis are with CKD Stage V (45.16%) and Stage IV (32.25%).

When we looked into the occupation of the patients in our study, most of them are unemployed (27.41%) and housewives (22.5%), and remaining are farmers (14.51%), labor (12.09%), students (8.87%). This suggests that unemployed individuals are subjected to stress as they are undergoing hemodialysis.

Subjects were classified according to their social habits, of smoking, alcohol, tobacco chewer, toddy and none. It was seen that individuals with one or two habits of alcohol (63.70%) and smoking (58.87%) have shown the highest percentage who are undergoing hemodialysis.

Subjects were classified according to their comorbidity conditions with CKD are Hypertension, Diabetes mellitus, CVD, Hepatitis, Obesity, Dyslipidemia, Asthma, Seizures and none of the comorbidities. In ourstudy, we observed that patients with Hypertension (91.12%), Diabetes mellitus (83.87%) and CVD (50.80%) have subjected to hemodialysis mostly and next to Hepatitis and Obesity with similar percentages 43.5%.

In our study, we observed that patients who have undergone hemodialysis for 25-36 months (24.19%) and 13-18 months (20.16%) have longer stay on dialysis.

Subjects were classified according to their marital status in which married individuals of both males (78.20%) and females(39.13%) shown highest in dialysis and unmarried females (13.04) and divorced males (5.12%) shown least percentages. Our data indicated that married males showed high percentage than married females, and unmarried males show less percentage than unmarried females, and divorced females show more than the divorced males, and widowed females show more than widowed males in carrying out hemodialysis.

Symptoms of stress in individuals are mostly headache (100%), fatigue (98.38%), irritation (96.77%), anxiety (95.96%), tensed muscles (95.96%), phobias (85.54%), neck pain (80.64%), insomnia (69.35%), constipation (67.74%), diarrhea (28.22%) and tremors in hand (17.77%).

Headache and fatigue are seen in almost all individuals of our study along with anxiety, tensed muscles, and neck pain.

It is observed that headache is seen in both the genders, tensed muscles, and anxiety is more in males than in females, anxiety is more observed in males than in females, fatigue, phobias, insomnia, constipation and

tremor in hands are mostly seen in females than in males. Depression, anxiety and insomnia are proved to be one of the symptoms of stress in hemodialysis patients (Dr. Deepti Bhargava*et al.*)[(15)].

Based on the perceived stress scale questionnaire, the level of stress is calculated in the patients. The data suggested that patients have the most commonly experienced a moderate level of stress (73.38%).

V. Conclusion

From the findings, the results clearly show that hemodialysis patients are stressed toward moderate level and most of them are males and between 46-55 years. The symptoms identified are headaches, fatigue, irritation, and anxiety are more among hemodialysis patients. It is identified that among all factors, the main causes of stress among hemodialysis patients is relationship stress, financial/economic stress, and psychological stress. The next stress they are feeling is future/career-related stress. This study observed that social habits like alcohol and smoking are the main cause of chronic kidney disease and most of the patients are in stage V and IV. Most of the people with hemodialysis have co-morbidity conditions like hypertension and diabetes mellitus

A lot of research has been done on stress in hemodialysispatients and concluded that hemodialysis patients have moderate stress and most of them are unemployed and we hope that, based on the analysis made, this will be of great help in understanding the relationship between stress and human life.

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