# ERECTILE DYSFUNCTION IN MALES ON HEMODIALYSIS

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## ABSTRACT

***Objective:*** To determine the frequency of erectile dysfunction in males on hemodialysis.

***Study Design:*** Descriptive study.

***Place and duration:*** Hemodialysis unit, Combined Military Hospital Kharian from October 2011 to April 2012.

***Patients and Methods:*** A total of 150 married male patients of end stage renal disease (ESRD) on hemodialysis were included in the study. Patients with cognitive and/or communication deficits and on hemodialysis for less than 06 months were excluded from the study. Erectile dysfunction (ED) was assessed using International Index of Erectile Function-5 (IIEF-5). Frequency of erectile dysfunction (ED) was analyzed using Statistical Package for Social Sciences (SPSS) version 17.

***Results:*** Mean age of the patients were 52.89 ± 8.25 years. Mean duration of hemodialysis was 34 ± 9.62 months. The underlying etiology of end stage renal disease were diabetic nephropathy 69(46%), hypertensive nephropathy 51(34%), obstructive nephropathy 18(12%), glomerulonephritis 9(6%), autosomal polycystic kidney disease 3(2%). Mean IIEF-5 score was 13.29± 6.38. The frequency of erectile dysfunction was 74%. The majority of the patients, 73(48.7%) had moderate erectile dysfunction, while 24 (16%) had severe and 14 (9.3%) had mild erectile dysfunction. Out of total 150 patients enrolled, 39 (26%) patients had no erectile dysfunction.

***Conclusion:*** ED is a highly prevalent problem in men with ESRD. Physicians are urged to recognize the high prevalence of erection problems in men with ESRD and proactively question all patients regarding their sexual function. This will not only improve the recognition of this condition among these patients but also improve the quality of life after adequate treatment.

**Keywords:** Erectile Dysfunction,Hemodialysis, IIEF-5.

## INTRODUCTION

Life expectancy for patients with end stage renal disease (ESRD) has been extended as a result of improvements in dialysis therapy[1]. As a result new problems that were previously ignored or not adequately addressed that affect the quality of life of patients with ESRD are being appreciated now. One of such problem is sexual dysfunction which is a common feature of patients withESRD. Sexual dysfunction is reported to be present in about 50-80% patients with ESRD[2,3]. Among sexual dysfunction, erectile dysfunction (ED) is oneof the most prevailing and significant medicalconditions in males because it can have a strong negativeimpact on quality of life. Although ED is frequently observed in hemodialysis patients, there is no consensus on the prevalence of ED in the literature. Several studies among menwith ESRD have estimated the prevalence of ED torange from 41.5% to 82%[4-6]. Patients with ESRD on hemodialysis show a significant deterioration in general well being, due to the disease as well as the demands of its treatment.

The etiology of ED inmen with ESRD is multifactorial. In addition to uremic milieu, many other factors play a role. These include autonomic neuropathy, vascular disease of the penile arteries and veins, disturbances in hypothalamic pituitary gonadal axis[6]. Hormonal changes involved in pathogenesis include low serum testosterone concentration, hyperprolactenemia, hyperoestrogenemia and elevated serum leutinizing hormone (LH) level.Inaddition, pharmacological therapy, physical and

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psychological stressof such patients also plays a role.

In Pakistan, due to scarcity of local data, the prevalence of ED indialysis patients is not known. We have conducted this study in order to evaluate the frequency and the severity of erectile dysfunction in hemodialysis patients by means of IIEF-5.

## PATIENTS AND METHODS

This descriptive study was carried out on 150 male patients attending the hemodialysis unit of Combined Military Hospital Kharian from October 2011 to April 2012. All married male patients, with a live spouses, having ESRD were included in the study. Patients with cognitive and/or communication deficits and on hemodialysis for less than 06 months were excluded from the study. Data collection was started after formal approval from the hospital ethics committee and after obtaining informed consent from the patients. Patients were selected from consecutive sampling. The subjects were informed about the research and its objectives. They were assured that confidentiality would be maintained during and after the study and information given would be used purely for research purposes. Those enrolled in the study were evaluated regarding demographic profile and details regarding ESRD. Erectile function was assessed with five items validated questionnaire, the International Index of Erectile Function-5 (IIEF-5)[7], which is an abridged version of the 15-items international index of erectile function. It evaluates sexual function in five areas: erectile function, orgasmic function, sexual desire, intercourse satisfaction and overall satisfaction, and discriminates well between men with and without erectile dysfunction. This questionnaire is currently widely used in clinical trials of ED. According to the IIEF-5 the patients were considered to have mild erectile dysfunction if the score was 16-21, moderate 11-15 and severe <11. All the data was analyzed using SPSS-17. Mean and standard deviations (SD) were calculated for quantitative variables i.e. age and duration of hemodialysis. Frequency and percentages were calculated for ED and etiology.

## RESULTS

In this study a total of 150 men were enrolled who fulfilled the criteria to participate in the study. Mean age of the patients was 52.89± 8.25 years. Mean duration of hemodialysis was 34 ± 9.62 months. The underlying etiology of end stage renal disease were diabetic nephropathy 69(46%), hypertensive nephropathy 51(34%), obstructive nephropathy 18 (12%), glomerulonephritis 9(6%), autosomal polycystic kidney disease 3(2%)(Table-1). The frequency of erectile dysfunction was 74%. Mean IIEF-5 score was 13.29 ± 6.38. The majority of the patients, 73 (48.7%) had moderate erectile dysfunction, while 24 (16%) had severe and 14 (9.3%) had mild erectile dysfunction (Figure-1). Out of total 150 patients enrolled, 39 (26%) patients had no erectile dysfunction.

## DISCUSSION

ED is frequentcomorbidity in patients on hemodialysis. This study confirms the high prevalence of erectile dysfunction among men with ESRD undergoing hemodialysis. In this study 74% of the participants had ED. Similar results have been reported in several studies conducted worldwide. The prevalence of ED in patients with chronic renal failure was first described in the 1970s. Initial reports published by Abram et al in 1975 showed that the prevalence of ED reached upto 80%[8]. Two studies conducted in Brazil showed that 57.9%[9] and 86.4%[10] males undergoing hemodialysis had ED respectively. A similar study from Turkey (82.9%) also showed high prevalence of ED in dialysis patients[10]. A study conducted in Pakistan showed the high prevalence (86%) of ED in patients on hemodialysis[11]. The majority of the patients in that study had severe ED, while in our study moderate ED was more common.

The etiology of ED in patients with ESRD is multifactorial. In men with chronic renal failure, disturbances in the pituitary-gonadal axis are present and progressively worsen as the renal

failure progresses. These disorders usually do not normalize with initiation of hemodialysis and, in fact, often progress. Chronic renal failure is associated with impaired spermatogenesis because of testicular damage, often leading to infertility. The etiology of testicular damage in uremia is not well understood. It is possible that plasticizer in dialysis tubing, such as phthalate, may play a role in propagating the abnormalities once patients begin maintenance dialysis[11]. Diabetic patients on hemodialysis have low serum total testosterone. This finding was observed in a study by Wong and collaborates[12]. According to Rhoden et al, diabetic male patients have low levels of testosterone than the general population, and uncontrolled diabetes is associated with impaired reproductive capacity[13]. The plasma level of the pituitary gonadotropin, LH, is elevated in uremic men. Elevated levels of LH are found in early renal insufficiency and progressively rise with deteriorating renal function.Elevated plasma prolactin levels are also commonly found in dialyzed men[14]. Increased production of prolactin is primarily responsible, since the kidney plays little, if any, role in the catabolism of this hormone. Secondary hyperparathyroidism may lead to increased secretion of prolactin and hypotestosteronemia which causes secondary hypogonadism[15].

**Table-1: Etiology of end stage renal disease in patients on hemodialysis(n=150).**

| Etiology | Percentage |
|---|---|
| Diabetic nephropathy | 46% |
| Hypertensive nephropathy | 34% |
| Obstructive nephropathy | 12% |
| Glomerulonephritis | 6% |
| Autosomal polycystic kidney disease | 2% |

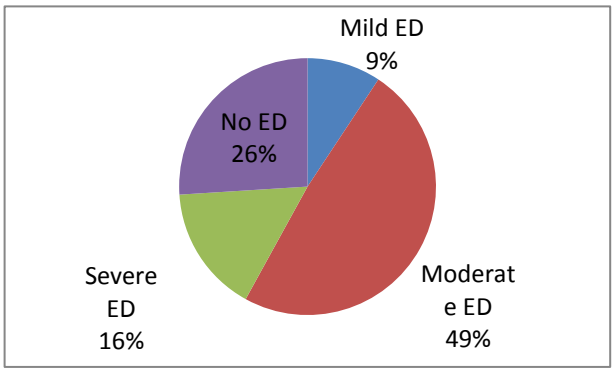


**Figure-1: Severity of erectile dysfunction in patients of end stage renal disease (n=150).**

In the Massachusetts Male Aging Study (MMAS), the prevalence of ED was strongly associated with age[16]. Age is thought to be the most important causative factor for ED. Age has been a matter for consideration in the origin of ED since publication of the results of the Kinsey Report in 1948[17]. The role of lifestyle factors such as smoking or alcohol consumption in sexual dysfunction has also been reported in literature. Since alcohol disinhibits psychological sexual arousal and suppresses physiological responding, alcohol consumption may increase ED in male hemodialysis patients. The association between smoking and ED has been well documented in the literature.

In MMAS, the risk of ED was increased with heart disease and hypertension[16]. In the Japanese population, Marumo et al reported that hypertension and heart disease were recognizedrisk factors for ED[18]. Several studies have demonstrated an association of impotence and vascular disease in patients with coronary heart disease, cerebrovascular accidents, and peripheral vascular disease[1]. There is a possibility that vascular compromise present in cardiovascular disease shares common determinants with vascular impairment of the erectile mechanism seen in patients with ESRD.

Diabetes mellitus is the most common causative disease of ESRD. In Massachusetts Male Aging Study (MMAS), the risk of ED was increased with diabetes mellitus[16]. In a Japanese study, Marumo et alreported that diabetes mellitus was a risk factor for ED[18]. It is reasonable to suppose that diabetic patients with chronic renal failure would exhibit an even greater prevalence of sexual dysfunction, as vascular

pathology is an important cause of ED in chronic renal failure patients.

Renal anemia may partially be responsible in the pathogenesis of ED. Erythropoietin therapy has been shown to improve sexual function in the male dialysis patients, with a direct effect upon endocrine function, as well as anemia. Upon evaluation of six patients with ED on hemodialysis, a significant increase in frequency of sexual relations was noticed, after the introduction of erythropoietin[19].

Duration of dialysis has not proved to bea determinant factor forthe presence of ED in hemodialysis patients[9]. A prospective study, however, has shown that intensification of sexual dysfunction occurred within the first 3 months of dialysis therapy, with stabilization of symptoms after this adaptation period[20]. In this study, when comparing patients who had been on dialysis for less than 3 months with those who had undergone treatment for more than 3 months, no difference in the ED was found.

Hemodialysis patients suffer from chronic fatigue, anxiety and a decline in self-esteem, which may result in lack of sexual interest and thus a decline in frequency of intercourse[21]. In the literature, the results are contradictory when considering the effects of psychogenic factors as causes of ED in hemodialysis patients. An assessment of 48 patients with CRF revealed the presence of severe or moderate depression in 43%, but complaints of ED were not significant when the two groups were compared against each other[4].

## CONCLUSION

ED is a highly prevalent problem in men with ESRD, with substantial impact on the quality of life. ED is primarily organic in nature and is a result of uremia as well as the other comorbid conditions that frequently accompany the patients with ESRD. Fatigue and psychosocial factors related to the presence of a chronic disease, as is the case with ESRD, are also contributory factors. Physicians are urged to recognize the high prevalence of erection problems in men with ESRD and proactively question all patients with ESRD are regarding their sexual function. This will not only improve the recognition of this condition among these patients but also improve the quality of life with adequate treatment.

## REFERENCES


1. Neto AF, de Freitac Rodrigness MA, Saraira Fitti pal di JA, Moreirer ED Jr. The epidemiology of ED and its correlation in men with chronic renal failure on hemodialysis in Londrina, Southern Brazil. Int J Impot Res 2002; 14(2):S19-26.
2. Hayami S, Sasagawa I, Wahada T. Influence of sex hormones on prostate volume in men on HD. J Androl 2000; 1:258-61.
3. Toojans AW, Janssen E, Laan E, Gooren LJ, Giltay EJ, Oe PL, et al. Chronic renal failure and sexual functioning: Clinical status versus objectively assessed sexual response. Nephrol Dial Transplant 1997; 12:2654-63.
4. Procci WR, Goldstein DA, Adelstein J, Massry SG. Sexual dysfunction in the male patient with uremia: a reappraisal. Kidney Int 1981; 19:317-23.
5. Breza J, Reznicek J, Pribylincova V, Zvara P. Erectile dysfunctions in patients treated with hemodialysis and kidney transplantation. Bratisl Lek Listy 1993; 94:489-93.
6. Palmer BF. Sexual dysfunction in uremia. J Am Soc Nephrol 1999; 10:1381-88.
7. Rosen R, Cappelleri J, Smith M. Development and evaluation of an abridged, 5-item, version of the IIEF as a diagnostic tool for erectile dysfunction. Int J Impot Res 1999; 11:319-26.
8. Abram HS, Hester LR, Sheridan WR, Epstein GM. Sexual functioning in patients with chronic renal failure. J Nerv Ment Dis 1975; 160:220-26.
9. Cerqueira J, Moraes M, Glina S. Erectile dysfunction: prevalence and associated variables in patients with chronic renal failure. Int J Impot Res 2002; 14: 65-71.
10. Inci K, Hazirolan T, Ati FT, Oruc O, Tombul T, Tasar C et al. Coronary artery calcification in HD patients and their correlation with the prevalence of ED. Trans-plant Proc 2008; 40(1):77-80.
11. Anees M, Mumtaz A, Barki MH, Ibrahim M, Hussain S, Uzair M et al. Sex hormones and erectile dysfunction in hemodialysis patients. Pak J Med Sci 2009; 25(6):922-27.
12. Wong JA, Lawen J, Kiberd B, Alkhudair WK. Prevalence and prognostic factors for erectile dysfunction in renal transplant recipients .Can Urol Assoc J 2007; 1(4):383-87.
13. Rhoden EL, Ribeiro EP, Teloken C, Souto CA. Diabetes is associated with subnormal serum levels of testosterone in men. BJU Int 2005; 96:867-70.
14. Gomez F, de la Cueva R, Wauters J-P, Lemarchand-Beraud T. Endocrine abnormalities in patients undergoing long-term hemodialysis: The role of prolactin. Am J Med1980; 68:522-30.
15. Piccoli GB, Bermont F, Magnano A ,Soragna G, Terzolo M. Prolactinoma in a diabetic dialysis patient with erectile dysfunction: A difficult differential diagnosis. Rev Diabet Stud 2006; 3(4):200-04.
16. Feldman HA. Construction of surrogate variable for impotence in the Massachusetts male aging study. J Clin Epidemiol 1994; 47:457-67.
17. Kinsey AC, Pomeroy W, Martin C. Age and sexual outlet. In: sexual behavior in the human male.WB Saunders: Philadelphia, 1948, p 218.
18. Marumo K, Nagatsuma K, Murai M. Effect of aging and diseases on male sexual function associated by the international index of erectile function. Jpn J Urol 1999; 90: 911-19.
19. Sobh M-A, Hamid IAA, Atta MG, Refoie AF. Effect of erythropoietin on sexual potency in chronic hemodialysis patients. Scand J Urol Nephrol1992; 26:181-85.
20. Paolo ND, Capotondo L, Gaggiotti E, Rossi P. Sexual function in uremic patients. Contrib Nephrol 1990; 77:34-44.
21. Arslan D, Aslan G, Sifil A, Cavdar C, Celebi I, Gamsari T, et al. Sexual dysfunction in male patients on hemodialysis: assessment with the International Index of Erectile Function (IIEF). Int J Impot Res 2002; 14:539-42.