ORIGINAL RESEARCH PAPER
Volume - 12 | Issue - 10 | October - 2023 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

GENDER DIFFERENCES IN CHRONIC KIDNEY DISEASE:A SINGLE CENTER STUDY.

General Medicine

Dr. Ankur Mittal Resident, Department Of General Medicine, Chirayu Medical College, Bhopal.

Dr. Vaishali Bhalavi Assistant Professor, Department Of General Medicine, Chirayu Medical College, Bhopal.

ABSTRACT

Background: Since men with chronic kidney disease (CKD) progress faster than women, an accurate assessment of CKD progression rates should be based on gender differences in age-related decline of glomerular filtration rate(GFR).The aim of the study is to find the gender difference in different stages of chronic kidney disease. **Materials And Method:** A prospective cross sectional study was performed all CKD patients admitted in the dept. of General Medicine, Chirayu Medical college & Hospital were taken. Firstly,CKD was divide into different stages and compare age and gender disparity with diferent stage of CKD. **Result And Conclusion:** In the present study, 50.7% female were diagnosed as chronic kidney disease and 49.2% males were diagnosed as chronic kidney disease.Majority of the patients with Grade IV CKD were males (62.2%) similarly majority of the females(59.6%) had grade IV CKD. In the present study,CKD was more prevalent in the age group of 51-60 years (43.1%).The association between gender and different grading of CKD was significant with p value of 0.011.

KEYWORDS

Gender, chronic kidney disease, e GFR, Age.

INTRODUCTION:

Chronic kidney disease (CKD) is a common disease worldwide and is associated with high rates of morbidity and mortality. The role of gender in ckd review discusses several aspects of the relationship between gender and CKD. While the prevalence of CKD tends to be higher in women, the disease is more severe in men, who also have a higher prevalence of end-stage renal disease. Most of the evidence in the current literature suggests a higher progression rate and mortality risk of CKD in men compared with women, except in post-menopausal women and diabetic patients. However, the decrease in glomerular filtration rate and the increase in the level of albuminuria are more prominent mortality risk factors among women. Sex hormones are thought to play a major role in the biological mechanisms associated with variability in CKD prevalence and characteristics between men and women[1].

Globally, there are more women with CKD compared with men, yet women comprise approximately 40% of patients receiving kidney replacement therapy[2]. Late referrals for kidney replacement therapy and delayed initiation of dialysis are more common in women[3,4]. Men with CKD have an increased risk of progression to kidney failure requiring kidney replacement therapy and death compared with women[5]. In the dialysis population, women have a higher risk of morbidity, hospitalization, and impaired quality of life and are more likely to withdraw from dialysis than men[6-8]. These differences may be due to biology and pathophysiology of CKD, estimations of kidney function (e.g., diagnosis based on estimated glomerular filtration rate), dialysis adequacy, and the potential effect of hormones and pregnancy on kidney function[9-12].

Awareness of CKD is lower in women compared with men,[13-15]. and there is also concern that sociocultural discrimination and disadvantage are major barriers to care (including dialysis) for women with CKD[12]. Existing studies have predominantly focused on access to transplantation[16] and racial and socioeconomic disparities[17-19]; however, little remains known on gender disparities in access and outcomes in CKD and dialysis[4,5,12,20].

According to the World Health Organization, gender refers to the "roles, behaviours, activities, attributes and opportunities that any society considers appropriate for women and men,"[21]whereas sex refers to the biological attributes, including anatomical, endocrine, or genetic traits. Gender disparities refer to differences in women's and men's access to health care and outcomes, and it is recognized that women encounter more barriers related to gender because of patriarchal cultures, family responsibilities, and economic dependence[21-23].

The aims of this study were to describe role of gender in different stages of chronic kidney disease.

MATERIALS AND METHODS:

A prospective cross sectional study was performed all CKD patients admitted in the department of General Medicine, Chirayu Medical college & Hospital, Bhopal.

In the present study, the association between male and female patients with different stages of CKD were found. Stages of CKD is determined by eGFR and eGFR is calculated by using Cockcroft-gault formula=140-age)xbody weight x(0.85 if female)/72 x serum creatinine.

Firstly, CKD was divide into different stages and compare age and gender disparity with diferent stages of CKD in the present study.

RESULTS :

Table 1: Association Between eGFR And CKD Grade

CKD GRADE	MEAN	SD	P-Value
II	62.29	2.654	<0.001
III	45.41	8.347	
IV	21.82	4. 684	
V	9.52	2.284	

On comparing the mean eGFR between CKD Grade, it was revealed that patients with higher grades of CKD had significantly reduced level of eGFR as revealed by the significant p value of <0.001.

Table 2: : Association Between Age And CKD Grade

		CKD GRADE				Total	P-value
		II	III	IV	V		
AGE GROUP (years)	21-30yrs	14.3%	13.7%	13.1%	2.2%	14.6%	
	31-40yrs	7.1%	19.2%	16.0%	16%	16.3%	
	41-50yrs	14.3%	9.6%	15.5%	6.0%	12.9%	
	51-60yrs	35.7%	41.1%	44.1%	44%	43.1%	
	>60yrs	28.6%	16.4%	11.3%	12.1%	13.1%	

CKD was more prevalent in the age group of 51-60 years (43.1%). On comparing the age distribution among the different age groups it was revealed that patients with CKD grade V and IV were older as compared to Grade III and II patients. The association was significant with p value of 0.018.

Table- 3:Association Between Sex And CKD Grade

		CKD GRADE				Total	P-value
		II	III	IV	V		
SEX	female	7	38	106	27	178	0.011
		3.9%	21.3%	59.6%	15.2%	100%	
	male	7	35	107	23	173	
		4.1%	20.3%	62.2%	13.4%	100%	

In the present study,50.7% female were diagnosed as chronic kidney disease and 49.2% males were diagnosed as chronic kidney disease.

Majority of the patients with Grade IV CKD were females (59.6%) similarly majority of the males(62.6%) had grade IV CKD.

The association between gender and different grading of CKD was significant with p value of 0.011.

DISCUSSION:

In the present study,50.7% female were diagnosed as chronic kidney disease and 49.2% males were diagnosed as chronic kidney disease.

Majority of the patients with Grade IV CKD were females (59.6%) similarly majority of the males(62.6%) had grade IV CKD.

This shows that females have higher risk of acquiring CKD and males have higher risk of developing end stage renal disease.

The association between gender and different grading of CKD was significant with p value of 0.011.This disparity in risk is shown on a global basis.

Global , GFR grade 4 affected 6.8 million females and 6.2 million males (1.6 and 1.8% from IKF respectively); GFR grade 5 without RRT was estimated to countries had highly contrasting male:female ratio values, while it was very similar in other, geographically distant territories [24]and is similar to our study.

In the general Japanese population[25], the average GFR decline is 0.36 ml/ min/1.73 m2 per year. GFR has declined at a similar rate in men and women in all age groups.[5]In the present study, On comparing the mean eGFR between CKD Grade, it was revealed that patients with higher grades of CKD had significantly reduced level of eGFR as revealed by the significant p value of <0.001.

Halbesma et al.[26] report that there are gender differences: –0.33 (women) and –0.55 (men) ml/min/1.73 m2 per year, based on the relatively new method of 'slope-based analysis' rather than 'threshold analysis.

In 2017,[27] the CKD prevalence in Central America and Mexico was estimated at 11.9% of the population.71 Prevalence was slightly higher in females (12.3%) than in males (11.5%).In the present study also the ratio of CKD is higher in females(62.6%) than males(59.6%) .

Although CKD prevalence in this region i.e. Central America and Mexico is slightly higher in females, mortality resulting from CKD is significantly higher in males. This could be the result of both sex- and gender-associated factors, including occupational factors, faster progression to end-stage renal disease, lower compliance with treatment, and lower use of health services. Access to dialysis and transplantation is lower in females than in males. Psychosocial and economic factors, as well as discrimination rooted in sociocultural attitudes toward women, have been suggested as a possible explanation for this finding[28].

The proportion of women with predialysis chronic kidney disease (CKD) is higher than that of men;this difference is likely due to the longer life expectancy of women and possibly to CKD overdiagnosis with use of estimated glomerular filtration rate equations.

Kidney function declines faster in men than women, possibly owing to unhealthier lifestyles in men and the protective effects of oestrogens or the damaging effects of testosterone.

CONCLUSION:

In our study, CKD tends to be higher in women, whereas the disease in men is more severe. Much of the evidence in the current literature indicates a higher progression rate of CKD in men, with the exception of post-menopausal women and diabetic patients. Mortality rate in patients with CKD is higher among men.

REFERENCES:

1. Idan Goldberg,Ilan Krause. The role of gender in chronic kidney disease. EMJ. 2016; 1[2]:58-64.
2. Carrero JJ, Hecking M, Chesnaye NC, Jager KJ. Sex and gender disparities in the epidemiology and outcomes of chronic kidney disease. Nat Rev Nephrol. 2018;14:151–164.
3. Kausz AT, Obrador GT, Arora P, Ruthazer R, Levey AS, Pereira BJG. Late initiation of dialysis among women and ethnic minorities in the United States. J Am Soc Nephrol. 2000;11:2351–2357.
4. Shah S, Leonard AC, Meganathan K, Christianson AL, Thakar CV. Gender and racial disparities in initial hemodialysis access and outcomes in incident end-stage renal disease patients. Am J Nephrol. 2018;48:4–14.
5. Ricardo AC, Yang W, Sha D, et al. Sex-related disparities in CKD progression. J Am Soc Nephrol. 2019;30:137–146.
6. Adams SV, Rivara M, Streja E, et al. Sex differences in hospitalizations with maintenance hemodialysis. J Am Soc Nephrol. 2017;28:2721–2728.
7. von der Lippe N, Waldum B, Østhus TB, Reisæter AV, Os I. Health related quality of life in patients in dialysis after renal graft loss and effect of gender. BMC Womens Health. 2014;14: 34.
8. Wetmore JB, Yan H, Hu Y, Gilbertson DT, Liu J. Factors associated with withdrawal from maintenance dialysis: a case-control analysis. Am J Kidney Dis. 2018;71:831–841.
9. Brar A, Markell M. Impact of gender and gender disparities in patients with kidney disease. Curr Opin Nephrol Hypertens. 2019;28:178–182.
10. Depner TA. Prescribing hemodialysis: the role of gender. Adv Ren Replace Ther. 2003;10:71–77.
11. Kuhlmann MK, König J, Riegel W, Köhler H. Gender-specific differences in dialysis quality (Kt/V): 'big men' are at risk of inadequate haemodialysis treatment. Nephrol Dial Transplant. 1999;14:147–153.
12. Piccoli GB, Alrukhaimi M, Liu ZH, Zakharova E, Levin A, World Kidney Day Steering Committee. What we do and do not know about women and kidney diseases; questions unanswered and answers unquestioned: reflection on world kidney day and international Women's Day. Am J Nephrol. 2018;47:103–114.
13. Coresh J, Byrd-Holt D, Astor BC, et al. Chronic kidney disease awareness, prevalence, and trends among U.S. adults, 1999 to 2000. J Am Soc Nephrol. 2005;16:180–188.
14. Hödlmoser S, Winkelmayer WC, Zee J, et al. Sex differences in chronic kidney disease awareness among US adults, 1999 to 2018. PLoS One. 2020;15:e0243431.
15. Plantinga LC, Boulware LE, Coresh J, et al. Patient awareness of chronic kidney disease: trends and predictors. Arch Intern Med. 2008;168:2268–2275.
16. Lipford KJ, McPherson L, Hamoda R, et al. Dialysis facility staff perceptions of racial, gender, and age disparities in access to renal transplantation. BMC Nephrol. 2018;19:5.
17. Bailey PK, Ben-Shlomo Y, Tomson CR, Owen-Smith A. Socioeconomic deprivation and barriers to live-donor kidney transplantation: a qualitative study of deceased-donor kidney transplant recipients. BMJ Open. 2016;6:e010605.
18. Crenesse-Cozien N, Dolph B, Said M, Feeley TH, Kayler LK. Kidney transplant evaluation: inferences from qualitative interviews with African American patients and their providers. J Racial Ethn Health Disparities. 2019;6:917–925.
19. Gander JC, Zhang X, Plantinga L, et al. Racial disparities in preemptive referral for kidney transplantation in Georgia. Clin Transpl. 2018;32:e13380.
20. Carrero JJ, Hecking M, Ulasi I, Sola L, Thomas B. Chronic kidney disease, gender, and access to care: A global perspective. Semin Nephrol. 2017;37:296–308.
21. Gender. World Health Organization. Accessed July 27, 2020.
22. Gender disparities. European Institute for Gender Equality. Accessed July 27, 2020.
23. Gupta GR, Oomman N, Grown C, et al. Gender equality and gender norms: framing the opportunities for health. Lancet. 2019;393: 2550–2562.
24. Boris Bikbov, Norberto Perico ,Giuseppe Remuzzi . Disparities in Chronic Kidney Disease Prevalence among Males and Females in 195 Countries: Analysis of the Global Burden of Disease 2016 Study.Nephron .2018..
25. Imai E, Horio M, Yamagata K et al. GFR decline rate in Japanese general population: a longitudinal 10 year follow-up study. Hypertension Res 2008; 31: 435–443.
26. Halbesma N, Brantsma AH, Bakker SJL et al. Gender differences in predictors of the decline of renal function in the general population. Kidney Int 2008; 74: 505–512.
27. Institute for Health Metrics and Evaluation. Institute for Health Metrics and Evaluation. GBD results tool. 2017. Accessed November 10, 2021.
28. Piccoli GB, Alrukhaimi M, Liu ZH, Zakharova E, Levin A, Committee WKDS. What we do and do not know about women and kidney diseases; questions unanswered and answers unquestioned: reflection on World Kidney Day and International Woman's Day. BMC Nephrol. 2018;19(1):66