Available online at: http://www.iajps.com   *Research Article*

A STUDY ON PREVALENCE AND INCREASING RISK FACTORS OF KIDNEY DISEASE AMONG LOCAL POPULATION OF PAKISTAN

[1]Dr. Qudsia Shaukat, [2]Dr. Sidra Sabahat, [3]Dr. Muhammad Shakeel

[1]Women Medical Officer at Shahbaz Sharif Hospital, Multan
[2]Women Medical Officer at RHC, Choti Zareen, Dera Ghazi Khan
[3] Medical Officer at BHU, Meeran pur, Rajanpur

Abstract:

*Introduction: Chronic Kidney Disease (CKD) is progressive loss of renal function.[1] CKD is a great burden on Pakistan's healthcare resources. Lack of screening and risk identification often result in delayed treatment and implementation of preventive measures. **Aims and objectives:** The basic aim of this study is to find the prevalence and increasing risk factors of kidney disease among local population of Pakistan. **Material and methods:** This cross sectional study was conducted at Multan during Dec 2017 to April 2018. A routine physical examination was performed and the following information collected: (i) smoking status, food frequency and physical activity (IPAQ, international physical activity questionnaire), co-morbidities (history of stroke, cardiovascular disease, known diabetes, known hypertension); (ii) anthropometry (iii) BP was measured thrice with a calibrated automated device. These all things were done for the selected population of the city. **Results:** The socio-demographic and clinical factors independently associated with presence of CKD were older age, hypertension, and diabetes, elevated SBP, and raised fasting plasma glucose, raised triglycerides, and history of stroke, (p < 0.05 for each). **Conclusion:** It is concluded that CKD was independently associated with older age, hypertension, diabetes, raised systolic BP, raised plasma fasting glucose, raised triglycerides, and history of stroke.*

Corresponding author:
Dr. Qudsia Shaukat,
Women Medical Officer at Shahbaz Sharif Hospital,
Multan

QR code

INTRODUCTION:

Chronic Kidney Disease (CKD) is progressive loss of renal function.[1] CKD is a great burden on Pakistan's healthcare resources. Lack of screening and risk identification often result in delayed treatment and implementation of preventive measures. This often results in End-Stage Renal Failure (ESRD), requiring transplant and dialysis therapy. Other complications of untreated CKD include cardiovascular disease (CVD). For a country with an already struggling economy, it is important that the prevalence of CKD be accurately estimated and association with preventable risk factors is determined [1].

The adverse outcomes associated with CKD including kidney failure, accelerated cardiovascular disease (CVD), and premature mortality have greater societal and economical impact in low- and middle-income countries. A glomerular filtration rate (GFR) level of less than 60 ml/min/1.73 m^2 (GFR stages G3a – G5), indicating CKD represents loss of half or more of the adult level of normal kidney function, the level below which the risk of adverse outcomes has been shown to increase. As demonstrated in a large meta-analysis of a large general-population cohort of 105,872 participants, albuminuria is an independent marker of increase CVD mortality [2,3].

Aims and objectives

The basic aim of this study is to find the prevalence and increasing risk factors of kidney disease among local population of Pakistan.

MATERIAL AND METHODS:

This cross sectional study was conducted at Multan during Dec 2017 to April 2018. A routine physical examination was performed and the following information collected: (i) smoking status, food frequency and physical activity (IPAQ, international physical activity questionnaire), co-morbidities (history of stroke, cardiovascular disease, known diabetes, known hypertension); (ii) anthropometry (height, weight and waist circumference); (iii) BP was measured thrice with a calibrated automated device. These all things were done for the selected population of the city.

Analysis

Student's t-test was performed to evaluate the differences in roughness between groups. Two-way ANOVA was performed to study the contributions. A chi-square test was used to examine the difference in the distribution of the fracture modes (SPSS 19.0 for Windows, SPSS Inc., USA).

RESULTS:

Table 01 shows the prevalence of CKD. Among all, 218(74.40%) had GFR >90, 61(20.81) were in CKD stage 2 with eGFR 60-89, and 14(4.77%) in CDK stage 3 with eGFR 30-59

Table-1: Chronic Kidney Disease prevalence.

	Number	Percentage
GFR >90	218	74.40
CKD stage 2 eGFR between 60-89	61	20.81
CKD stage 3 eGFR between 30-59	14	4.77

CKD: Chronic Kidney Disease
GFR: Glomerular Filtration Rate
eGFR: Estimated GFR.

Table 02 shows adjusted odds ratios and 95% CI of factors associated with CKD. The socio-demographic and clinical factors independently associated with presence of CKD were older age, hypertension, diabetes, elevated SBP, raised fasting plasma glucose, raised triglycerides, and history of stroke, (p < 0.05 for each)

<div align="center">Table 02: Multivariable regression models for Chronic Kidney Disease</div>

Characteristics	Adjusted OR (95% CI)	Adjusted OR (95% CI)
Age in years	1.35 (1.28 – 1.41) For each 05 year increase	1.31 (1.24 – 1.38) For each 05 year increase
Physical activity		
< 840 METs	1.35 (1.04 – 1.75)	-
≥ 840 METs	1.00	
Hypertension		
Hypertensive	NA	1.90 (1.40 – 2.57)
Non-hypertensive		1.00
Diabetes mellitus		
Diabetic	NA	1.69 (1.18 – 2.43)
Non-diabetic		1.00
Systolic BP, mm Hg	NA	1.15 (1.09 – 1.22) For each 10 mm Hg increase
Fasting plasma glucose, mmol/L	NA	1.08 (1. – 1.13) For each 1 mmol/L increase
Triglycerides, mmol/L	NA	1.07 (1.01 – 1.13) For each 0.5 mmol/L increase
History of stroke		
Positive	NA	1.73 (1.03 – 2.92)
Negative		1.00

NA = Not applicable; METs = Metabolic Equivalents; BP = Blood Pressure

DISCUSSION:

CKD has always been thought to exert a great burden on Pakistan, but no large-scale surveys estimating the prevalence in the general population have been done. To our knowledge, the current study is the first such survey to assess the prevalence in asymptomatic population of an urban city in Pakistan[3]. The estimated prevalence of CKD from our survey is much higher than the reported prevalence from Unites States, India and China. Our study objectively shows that CKD is a major healthcare problem[4]. We found significant association of HTN and DM, both preventable risk factors with CKD. Hence, it is likely that HTN and DM are the major causes of CKD in urban areas of Pakistan [5]. Furthermore, as CKD is a progressive disease, most patients without treatment will develop ESRD and other metabolic complications. This not only exerts a great burden on the struggling economy, but also affects the productivity of a society. Evidence-based healthcare policies have been shown to be very successful in decreasing the burden of CKD in Brazil, Cuba and Bolivia respectively, and serve as an excellent model for other developing countries [6].

Age was found to be the most strongly associated risk factor in our study. Several studies performed in elderly populations have shown the prevalence of CKD to be more than 20% [7]. In general, GFR declines by 1 ml/min/1.73 m^2 per year after the age of 30 years in healthy persons and the steep increase in the prevalence of CKD in the elderly might also be partly due to co-morbidities of CKD, such as cardiovascular diseases or diabetes, however, it is still unclear whether the decline in kidney function with increasing age represents pathology or is a part of the normal ageing process [8].

We could not find significant association between kidney disease and family histories of dyslipidemia, coronary artery disease, stroke, kidney stones, kidney failure, lower urinary tract symptoms, facial puffiness and pedal edema [9]. A probable explanation of this might be the limitation of our study that all medical histories were self-reported. On the other hand, smoking, again self-reported was significantly associated with kidney disease in our study. The role of smoking as a risk factor for kidney disease is being increasingly recognized and similar findings have been noticed in our neighborhood Bangladesh. Factors such as quantity of cigarettes being smoked need to be standardized to establish the association of smoking with CKD as an independent risk factor [10].

CONCLUSION:

It is concluded that CKD was independently associated with older age, hypertension, diabetes,

raised systolic BP, raised plasma fasting glucose, raised triglycerides, and history of stroke.

REFERENCES:

1. Luyckx VA, Brenner BM: Low birth weight, nephron number, and kidney disease. Kidney Int Suppl. 2005, 68: S68-S77. 10.1111/j.1523-1755.2005.09712.x.
2. Fischbacher CM, Bhopal R, Rutter MK, Unwin NC, Marshall SM, White M, Alberti KG: Microalbuminuria is more frequent in South Asian than in European origin populations: a comparative study in Newcastle, UK. Diabet Med. 2003, 20: 31-36. 10.1046/j.1464-5491.2003.00822.x.
3. Baltatzi M, Savopoulos C, Hatzitolios A: Role of angiotensin converting enzyme inhibitors and angiotensin receptor blockers in hypertension of chronic kidney disease and renoprotection. study results. Hippokratia. 2011, 15: 27-32.
4. Jafar TH. The growing burden of chronic kidney disease in Pakistan. N Engl J Med. 2006;354:995–997. doi: 10.1056/NEJMp058319.
5. Khan FS, Lotia-Farrukh I, Khan AJ, Siddiqui ST, Sajun SZ, Malik AA, Burfat A, Arshad MH, Codlin AJ, Reininger BM, McCormick JB, Afridi N, Fisher-Hoch SP. The burden of non-communicable disease in transition communities in an Asian megacity: baseline findings from a cohort study in Karachi, Pakistan. PLoS One. 2013;8(2):e56008.
6. Chobanian AV, Bakris GL, Black HR, Cushman WC, Green LA, Izzo JL, Jones DW, Materson BJ, Oparil S, Wright JT, Roccella EJ. Seventh report of the joint national committee on prevention, detection, evaluation, and treatment of high blood pressure. Hypertension. 2003;42:1206–1252.
7. Nagata M, Ninomiya T, Doi Y, Yonemoto K, Kubo M, Hata J, Tsuruya K, Iida M, Kiyohara Y. Trends in the prevalence of chronic kidney disease and its risk factors in a general Japanese population: the Hisayama Study. Nephrol Dial Transplant. 2010;25:2557–2564.
8. Yu MK, Lyles CR, Bent-Shaw LA, Young BA. Risk factor, age and sex differences in chronic kidney disease prevalence in a diabetic cohort: the pathways study. Am J Nephrol. 2012;36:245–251.
9. Manjunath G, Tighiouart H, Coresh J, Macleod B, Salem DN, Griffith JL, Levey AS, Sarnak MJ. Level of kidney function as a risk factor for cardiovascular outcomes in the elderly. Kidney Int. 2003;63:1121–1129.
10. National Kidney F. K/DOQI clinical practice guidelines for chronic kidney disease: evaluation, classification, and stratification. Am J Kidney Dis. 2002;39:S1–S266.