

Kidney screening: A profile of Nepal

Maginsh Dahal^{1*} and Rishi Kumar Kafle²

¹Research Officer, National Kidney Centre, Vanasthali, Kathmandu, Nepal and ²Senior Consultant Nephrologist and Executive Director, National Kidney Centre, Vanasthali, Kathmandu, Nepal

Abstract: *Introduction:* Chronic kidney disease (CKD) is a long-term condition where the kidneys do not work effectively. *Objective:* To determine the status of Kidney Diseases among the people of Nepal. *Methodology:* A single day Screening was done among 1697 people who attended Free Kidney Screening Camp. General checkups, Sugar and Albumin checkup in Urine Sample and screening questionnaires were used for collecting information. All the collected information was entered on SPSS 20. Percentages, cross tabulations were done for analysis. *Results:* Among 1697 participants screened, mean age of participants was found to be 39.7 years. 21% Hypertensive, 18.1% Diabetic, 5.8% having Kidney diseases, 15.8% having Urine Infection, 1.9% undergoing dialysis, 1.1% have done kidney transplant. *Conclusion:* We can now conclude that the total prevalence of the kidney disease in Nepal has been increased from the previous 10% to more than 12%.

Keywords: Kidney Screening, Kidney, Hypertension, Diabetes, Nepal

Introduction

Chronic kidney disease (CKD) is a significant global problem creating an increasing worldwide health and economic burden [1]. As CKD is usually silent until its late stages, many patients with CKD are detected only shortly before the onset of symptomatic kidney failure when there are few opportunities to prevent adverse outcomes. Earlier detection may allow more time for evaluation and treatment but would require explicit testing strategies for asymptomatic individuals at increased risk [2].

The kidneys are a pair of organs located in the back of the abdomen on either side of spine in middle of back, just above waist. Each kidney is about 4 or 5 inches long - about the size of a fist. The kidneys' function is to filter the blood. All the blood in our bodies passes through the kidneys several times a day [3-4]. The kidneys remove wastes, control the body's fluid balance, and regulate the balance of electrolytes, and help regulate blood pressure [5]. Chronic kidney disease (CKD) is a long-term condition where the kidneys do not work effectively. CKD does not usually cause symptoms until reaching an advanced stage.

It is usually detected at earlier stages by blood and urine tests. Main symptoms of advanced kidney disease include:

- tiredness
- swollen ankles, feet or hands (due to water retention)
- shortness of breath
- nausea
- blood in the urine [6-7]

Kidney disease is most often caused by other conditions that put a strain on the kidneys. High blood pressure (hypertension) and diabetes are the most common causes of kidney disease. The evidence indicates that high blood pressure causes just over a quarter of all cases of kidney failure. Diabetes has been established as the cause of around one-third of all cases [8]. The early recognition of CKD is made difficult by its largely asymptomatic nature. An early diagnosis of CKD allows preventive measures to be put in place that may favourably affect clinical outcomes and in those with progressive kidney failure facilitate a smooth, orderly and less morbid transition on to dialysis and transplant programmes [9].

The detection of CKD early in its course relies on the performance of tests on urine (albumin or protein) and blood (serum creatinine), and these together with a blood pressure measurement have been popularly called a 'kidney health check' [10]. There is no other

simple clinical means to establish the presence of kidney damage and to classify it into stages by severity [11]. It is important to recognize at the outset that screening can occur in two ways - population-based screening where test is offered to all individuals in a targeted group and opportunistic screening when a test is offered to an individual without symptoms of the disease when they present to the health-care system for other reasons [12-14]. Hence, this screening test was conducted to determine the status of Kidney Diseases among the people of Nepal

Material and Methods

A single day Screening was done among who attended Free Kidney Screening Camp on 2015 in Chitwan (425), Tanahaun (790) and Butwal (482). General checkups, Sugar and Albumin checkup in Urine Sample and screening questionnaires were used for collecting information. All the participants present on the day of screening were included in the study. Verbal informed consent was taken from all the

respondents before involving in the study. Ethical clearance was taken from the Research Unit of NKC. Possible confidentiality of the participants was maintained by research unit of NKC. All the collected information was entered on SPSS 20. Percentages, cross tabulations were done for analysis.

Results

Among 1697 participants screened, mean age of participants was found to be 39.7 years. Majority was married and was Hindu. Among total participants 12.84% never attended school. 23.16%housewives attended screening camp followed by students, Agriculturist, Businessman and service holder. 35.8% of the participants were in disease conditions with one or multiple illnesses. 21% Hypertensive, 18.1% Diabetic,5.8% having Kidney diseases, 15.8% having Urine Infection.1.9% undergoing dialysis, 1.1% have done kidney transplant.

Table-1: Prevalence of Obesity among screened people (n=1697)

BMI	Chitwan (347)		Butwal (482)		Tanahaun (790)	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
less than 18	23	6.6	27	5.6	38	4.8
18-25	187	53.9	197	40.9	350	44.4
more than 25	137	39.5	258	53.5	402	50.8
Total	347	100	482	100	790	100

Among the 1697 participants whose height and weight were observed, 39.5% screened people was found to be obese in chitwan, 53.5% in

Butwal and more than half (50.8%) were in Tanahaun. The average was 47.9%.

Table-2: Prevalence of HTN among screened people

HTN	Chitwan (347)		Butwal (482)		Tanahaun (790)	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Low BP	26	7.7	74	16	134	16.9
Ideal BP	213	63.2	216	46.9	567	71.8
Prehypertensive	41	12.2	74	16	20	2.5
Hypertension	57	16.9	97	21.1	69	8.7
Total	337	100.0	461	100	790	100

Among the 1697 participants whose Blood pressure were measured 29.1% screened people was found to be Hypertensive in chitwan, 37.1%

in Butwal and 11.2% were in Tanahaun. The average was 25.9%.

Table-3: Presence of albumin and sugar in the urine of screened people (n=1697)

	Chitwan (347)				Butwal (482)				Tanahaun (790)			
	Albumin		Sugar		Albumin		Sugar		Albumin		Sugar	
	Fq	%	Fq	%	Fq	%	Fq	%	Fq	%	Fq	%
Nil	310	84.7	325	90.0	422	93.2	433	96	653	82.6	777	98.3
Trace	37	10.1	18	5.0	18	3.9	2	.4	107	13.5	4	.5
+	6	1.6	13	3.6	8	1.8	4	.8	19	2.4	8	1
++	6	1.6	5	1.4	5	1.1	10	2.2	5	.6	1	.1
+++	2	.5	-	-	-	-	2	.4	3	.4	-	-
++++	-	-	-	-	-	-	-	-	3	.4	-	-
Total	361	98.6	361	100	453	100	451	100	790	100	790	100

Fq: Frequency

Among the 1697 participants whose Sugar and Albumin was tested, (15.3%) were found having protein leakage in Urine and (10%) were found sugar in urine in chitwan similarly in case of Butwal (6.8%) were found having protein leakage in Urine and (4%) were found sugar in Urine, Likewise in case of Tanahaun (17%) were found having protein leakage in Urine and about 2 percent were found sugar in Urine.

Discussion

Kidney problem is the burning issue in this decade. In the underdeveloped countries like Nepal Dialysis costs 20,000 rupees per month and the average income for a Nepali is 26,000 rupees per annum making dialysis an impossible choice for most Nepali people. This may strike very hard in national economy. Many people sell their possessions and property to pay for treatment of kidney disease and they are left with nothing. Kidney transplants cost 8 to 10 Lakhs (Nepali Rupees) and are only available in foreign countries. It was estimated that 10% or 2.6 million Nepali people suffer from kidney disease. Kidney disease is increasing in Nepal by more than 10,000 people per year. But this study shows that the estimation has rises upto more than 12% of Nepalese people. Most kidney patients are not diagnosed until the last stage of disease.

Studies show that chronic non communicable diseases are now the major cause of morbidity and mortality worldwide in both developed and developing countries. Of these, chronic kidney disease (CKD), diabetes mellitus (DM), hypertension, and cardiovascular disease (CVD) are the most significant. The increasing rates of risk factors, such as obesity, smoking, and inactivity, suggest that the prevalence of non-communicable disease will grow most rapidly in low- and middle-income nations during the coming decades. As the evidence for the pandemic of non-communicable chronic diseases is irrefutable, there is a paucity of strong programs to detect, manage, and prevent these diseases mostly in low-income settings.

Many respondents don't know about their health conditions and with special reference to kidney disease as, they have not checked yet. Disease like HTN and DM which was seen among respondents are prone to cause kidney diseases. Proper counseling was given to those having diseases and having unhealthy personal habits. Chances were shown of having personal disease to those individuals having hereditary diseases. Personal habits directly influenced health behaviors and

health conditions. Some of the individuals were diagnosed for HTN for the first time in the screening program and relevant advice for further diagnosis was given.

Conclusion

Due to lack of such kind of studies in Nepal and we being one of the pioneer in estimating the kidney disease prevalence in Nepal. This study can be helpful to estimate the baseline information for the total prevalence of the disease

in the country. We can now conclude that the total prevalence of the kidney disease in Nepal has been increased from the previous 10% to more than 15.8 %.

Acknowledgement

NKC would like to acknowledge all the staffs and supporting members who were present during the screening camp and to all the participants who participated in the camp.

References

1. Chadban SJ, Briganti EM, Kerr PG et al. Prevalence of kidney damage in Australian adults: The AusDiab kidney study. *Journal of the American Society of Nephrology*. 2003; 14:S131-8.
2. Levin A, Hemmelgarn B, Culleton B et al. Guidelines for the management of chronic kidney disease. *Canadian Medical Association Journal*. 2008; 179:1154-62.
3. The causes of chronic Kidney diseases. Retrieved on: 08 April 2015. Retrieved from: <http://www.sgkpa.org.uk/main/the-causes-of-chronic-kidney-disease>
4. Causes and prevention of kidney Diseases. 27 Jan 2015. Retrieved from: <http://talktokemi.blogspot.com/2015/01/causes-n-prevention-of-kidney-disease.html>
5. Mathew T and Corso O. Early detection of chronic kidney disease in Australia: Which way to go?. *Nephrology* 2009; 14: 367-373.
6. Sharma SK et al. Burden of CKD, Proteinuria, and Cardiovascular Risk among Chinese, Mongolian, and Nepalese Participants in the International Society of Nephrology Screening Programs. *American Journal of Kidney Diseases*, 2010; 56(5): 915-927.
7. Dahal M and Kafle RK. Effectiveness of protein supplement among patients undergoing Haemodialysis in National Kidney Centre. *Al Ameen J Med Sci*. 2015; 8(2):168-170.
8. Chhetri PK, Satyal PR, Kafle R, Khakurel S, Pradhan BR. Experience of hemodialysis in Bir hospital. *Nepal Med Coll J* 1999; 1:99-101
9. Dulal RK, Karki S, Dahal A. A Cross Sectional Survey of Kidney Transplantation Cost. *J Nepal Health Res Counc* 2008; 6(12):5-10.
10. Levey AS, Eckardt KU, Tsukamoto Y et al. Definition and classification of chronic kidney disease: a position statement from Kidney Disease: Improving Global Outcomes (KDIGO). *Kidney Int'l* 2005; 67: 2089-100.
11. Hidai H, Hyudo T. Changing dialysis reimbursement policy in Japan: cost of incentive for quality-based care. *Nephrol Dialysis Transplant* 2003; 18: 463.
12. Dirks JH, de Zeeuw D, Agarwal SK, Atkins RC, Correa-Rotter R, D'Amico G et al. Prevention of chronic kidney and vascular disease: Toward global health equity-the bellagio 2004 declaration. *Kidney International. Supplement*, 2005; (98): S1-6.
13. Narula AS. Chronic Kidney Disease: The Looming Threat (Editorial). *MJAFI*, 2008; 64(1):2-3.
14. RNG Haemodialysis and RNG Peritoneal Dialysis Group (Edit). Evidence Based Dietetic Guidelines Protein Requirements of Adults on Haemodialysis And Peritoneal Dialysis. *KDGHM* 2014; 143-146.

*All correspondences to: Mr. Maginsh Dahal, Research Officer, National Kidney Centre, Vanasthali, Ring Road, Kathmandu-44600 Nepal. E-mail: maginsh@gmail.com