Prevalence of diabetic nephropathy in an underserved rural community

Sir,

There is a paucity of data on the incidence and prevalence of chronic kidney disease (CKD) in India which is hampering the development of public policy and allocation of resources for the treatment of renal replacement therapy.

We report the results of our study that carried out a cross-sectional population survey in a village (Karakhadi, Gujarat) comprising 1889 adult persons of which 1681 participated (89% response rate); most of them are below the poverty line of less than US$ 2/day. Vital data was obtained on all participants, however, laboratory data was limited to persons who were known to be diabetic (n = 118). We collected samples for CBC, FBS, A1c, creatinine, urine albumin, and serum lipids. We also calculated the GFR by MDRD formula.

The crude prevalence of diabetes was 7.2% (all type 2); diagnosed hypertension in 4.3% and undiagnosed hypertension was 21.8%. The point prevalence of diabetic nephropathy defined as micro-albumin >30 was 13.6% (14 patients in CKD 1, and one each in CKD stages two and three respectively). Subjects who had micro-albumin <30 (86.4%) were 102. Further, in these diabetics, total cholesterol >200 mg/dl was found in 14%, triglyceride level >150 mg/dl was found in 25%, creatinine >1.1 mg/dl was found in 6%, and Hb A1c >6.5% was found in 45%. Patients with A1c >6.5% had statistically higher levels of micro-albumin (P = 0.001), total cholesterol (P = 0.053), triglycerides (P = 0.050), and LDL cholesterol (P = 0.045) suggesting metabolic complications of diabetes [Table 1].

Table 1: Study of variables, means, and SD of the cohort

Variable	Mean	SD
Age	50.8	14.8
HbA1c	7.0	2.1
TChol	166.3	33.8
Trigly	126.6	80.4
HDL	44.9	10.6
LDL	96.8	28.7
VLDL	23.2	11.2
FBS	118.8	61.2
Creatinine	0.73	0.25
Micro-albumin	21.6	52.6

Modi and Jha[1] found that 346 new end stage renal disease (ESRD) patients were diagnosed during the study period from a population base of approximately 0.5 million; diabetic nephropathy was the commonest (44%) cause of ESRD. There are significant differences in the study reported by Modi and Jha.[1,2] Their population included the large urban area of Bhopal with a relatively sophisticated level of tertiary medical services. Our cohort is a rural part of India with the majority of people below the poverty level without primary or tertiary medical services. Furthermore, they report on the entire population of approximately 0.5 million, whereas our study is limited to patients with known type 2 diabetes. Nonetheless, our findings are novel as we found that most of the patients with diabetic nephropathy were CKD 1, suggesting a relatively benign disease process.

It is noteworthy that despite the lack of manifestations of moderate or severe proteinuria, diabetics with A1c >6.5 had metabolic complications of diabetes. In this regards, our findings are in line with that of Raman *et al.*[3] group which carried out a population-based cross-sectional survey on 1414 patients having type 2 diabetes mellitus in South India. They found an incidence of metabolic syndrome to be 73.3%. In subjects with diabetes mellitus, without and with metabolic syndrome, the prevalence of nephropathy was 20.5% and 18.0% respectively.

These patients might benefit from ACE inhibitors, aggressive control of diabetes, and hypertension. We speculate that the low prevalence of diabetic nephropathy could be vegetarian diet; however, genetics or environmental factors may also be implicated. Another explanation could be that patients in CKD 5 are simply dying due to lack of renal replacement therapy and are not accounted for in this cohort. Longitudinal studies with larger sample size are indicated to study the incidence and prevalence of CKD in emerging countries such as India where there are vast disparities in access to health services between urban and rural areas.

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Quick Response Code:	Website: www.indianjnephrol.org
	DOI: 10.4103/0971-4065.106049