

## Cost of treating diabetic kidney disease

We are in the midst of a global epidemic of type 2 diabetes. Currently, there are more than 371 million people with diabetes in the world and it is estimated to grow to 552 million by the year 2030, of which 101 million will be in India.<sup>[1]</sup> Diabetic kidney disease (DKD) is the most common cause of end stage kidney disease (ESKD) both in the developed and the developing world accounting for 20-40% of patients starting renal replacement therapy;<sup>[2]</sup> in India, 31% of the ESKD population have DKD.<sup>[3]</sup> This figure is likely to rise steadily over the next 2 decades.

The humanistic, societal and economic impact of DKD is enormous. In addition to seriously affecting physical health and quality-of-life of the patients, it has disruptive and permanent implications on their identity, emotions, family, life-style, relationships and employment. It places a huge economic burden on the health-care system; e.g., a cost of illness study carried out in the last decade estimated that the total annual cost to the National Health Service in the UK was £685 million (\$1.5 billion) and the total annual medical cost to all payers in the US was \$16.8 billion.<sup>[4]</sup> Moreover, kidney disease accounts for most of the excess death in type 2 diabetics.<sup>[5]</sup>

In this issue of the journal Satyavani *et al.*<sup>[6]</sup> have looked at the direct cost of treating chronic kidney disease (CKD) in type 2 diabetics in India. The authors assessed comparative cost of treatment of diabetics without CKD, those with Stage 1-4 CKD, those needing dialysis and those with kidney transplantation. They determined cost of treatment at two levels: Cost of hospitalization and total cost of treatment over the previous 2 years taking into account costs of hospitalization, consultation, medication, laboratory tests, dialysis treatment, transplantation surgery and transportation. Unsurprisingly, treatment of diabetics with ESKD incurred very high expenditure – on average INR 500,000 (\$10,753) for a dialysis patient and INR 345,000 (\$7,419) for a transplant patient over a 2 year period. Over the same period, the average cost of treatment of diabetics with and without CKD were INR 100,000 (\$2150) and 30,000 (\$645) respectively. Nearly 80% of all patients had a family income of INR 20,000 or less a month and INR 10,000 or less in 40%. Only 23% had medical insurance to cover the costs of

treatment and the rest were out of pocket expenditure. These figures put the actual cost of treatment of DKD in context. By the authors' own admission, there are several limitations of this study including the small sample size and the data collected from a specialized diabetes center and a private hospital limiting the generalizability of the results to certain private sector health-care organizations only. However, it does provide an estimate of the financial cost of treating DKD in Indian setting.

In the absence of state funded medical treatment and medical insurance cover, in a developing country like India, patients with CKD/ESKD often have to take loans, mortgage or sale properties in order to pay for treatment. There is also the issue of access to treatment; in India most of the dialysis and kidney transplant centers are in the private sector.<sup>[7]</sup> The high cost of treatment in such centers makes treatment unaffordable to most. Ramachandran and Jha have recently demonstrated that even kidney transplantation, the most cost-effective form of renal replacement therapy, in a public sector hospital can have catastrophic financial consequences pushing the majority of families into severe poverty.<sup>[8]</sup> Given the magnitude of the problem we are facing, the exponentially rising prevalence of DKD and the consequent economic impact, “the only practical solution for India, just as it would be for any other country,” will be putting more effort in preventing and delaying progression of diabetic nephropathy.<sup>[2,7]</sup>

DKD is preventable. There is substantial evidence that early and effective therapeutic intervention in type 2 diabetes can prevent DKD, and retard progression of established DKD. Strict glycemic and blood pressure control can reduce the incidence and slow progression of DKD.<sup>[9,10]</sup> Inhibition of the renin angiotensin system decrease progression from normoalbuminuria to microalbuminuria, microalbuminuria to macroalbuminuria and the development of ESKD.<sup>[11-13]</sup> A number of new agents are being trialed that may in future be able to reduce renal damage and fibrosis.<sup>[2]</sup>

The study by Satyavani *et al.* not only gives us an estimate of the direct cost of treating renal complications in type 2 diabetics in India, it also brings home the importance of preventing such complications and emphasizes the need for developing cost-effective strategies to treat DKD.

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