

## Chronic kidney disease and its prevention in india

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Submitted: 25-01-2024

Accepted: 03-02-2024

### ABSTRACT :-

Chronic kidney disease (CKD) is defined by persistent urine abnormalities, structural abnormalities or impaired excretory renal function suggestive of a loss of functional nephrons. The majority of patients with CKD are at risk of accelerated cardiovascular disease and death. For those who progress to end-stage renal disease, the limited accessibility to renal replacement therapy is a problem in many parts of the world. Risk factors for the development and progression of CKD include low nephron number at birth, nephron loss due to increasing age and acute or chronic kidney injuries caused by toxic exposures or diseases (for example, obesity and type 2 diabetes mellitus). The management of patients with CKD is focused on early detection or prevention, treatment of the underlying cause (if possible) to curb progression and attention to secondary processes that contribute to ongoing nephron loss. Blood pressure control, inhibition of the renin–angiotensin system and diseasespecific interventions are the cornerstones of therapy. CKD complications such as anaemia, metabolic acidosis and secondary hyperparathyroidism affect cardiovascular health and quality of life, and require diagnosis and treatment. Chronic kidney disease and its prevention in India.

**Key words :-** Chronic kidney disease india , chronic kidney disease prevention.



### INTRODUCTION :-

Chronic kidney disease and its prevention in India. Chronic kidney disease (CKD) is an important, chronic, noncommunicable disease

epidemic that affects the world, including India. Because of the absence of a renal registry in India, the true magnitude of CKD/end-stage renal disease (ESRD) is unknown. Two communitybased studies, although methodologically different, have shown a prevalence of chronic renal failure of 0.16% and 0.79%. The cost of immunosuppression with basic triple immunosuppression drugs (cyclosporine, steroid, and azathioprin) is US \$250 per month. There are hardly any statefunded medical treatment and medical insurance facilities for CKD and ESRD patients in India. India has nearly 700 nephrologists and approximately 400 dialysis units with 1000 dialysis stations, with the majority being in the private sector. A maximum of 2% of patients can be subjected to maintenance hemodialysis. Until now, approximately 3000 patients have been initiated on chronic ambulatory peritoneal dialysis. India has approximately 100 RT centers, mostly in private setup, and not more than 3000 to 4000 RTs are performed annually. Thus, only 3% to 5% of all patients with ESRD in India get some form of renal replacement therapy. Thus, planning for prevention of CKD on a long-term basis is the only practical solution for India. It appears that even in India, diabetes and hypertension are responsible for 40% to 50% of all cases of chronic renal failure. Screening for these 2 diseases and CKD is simple and easy to perform. The best approach will be to start screening for CKD in a high-risk group, like firstdegree relatives of patients with diabetes, hypertension, and CKD, and simultaneously making a platform to run the program through the existing health care system of the country. The key issue of funding the program needs to be explored. Initial funding may come from international agencies like the World Health Organization, World Bank, and International Society of Nephrology, along with support from the country itself. Ultimately, funding has to be sustained from our own existing health care system. A healthy, balanced diet can reduce your risk of kidney disease by keeping your blood pressure and cholesterol at a healthy level.

### MAGNITUDE :-

The burden of chronic kidney disease (CKD) in India cannot be assessed accurately. The approximate prevalence of CKD is 800 per million population (pmp), and the incidence of end-stage renal disease (ESRD) is 150–200 pmp.

The most common cause of CKD in populationbased studies is diabetic nephropathy.5 Feb 2009F CHRONIC KIDNEY

**DISEASE** .In the absence of a renal registry, the exact disease burden of CKD/ESRD in the Indian population cannot be assessed accurately. In the most representative population-based study from North India, using a multistage cluster sampling technique in which serum creatinine and urine samples were examined in every subject studied, the prevalence of CKD stage 3 and beyond was found in 0.79% subjects out of 4,972 examined. There are only 2 populationbased studies in India commenting on the magnitude of CKD. Mani from Chennai in south India, while, in general, initiating a prevention program (more so for diabetes and hypertension at the community level in a rural area with a total population 25,000), reported a prevalence of chronic renal failure (CRF) of 0.16% and other renal diseases (short of CRF) in 0.7% of patients. The second study, which has been accepted for publication and is currently in press [2], was done by our group. Four thousand nine hundred and seventytwo patients in urban communities in Delhi were screened for blood urea and creatinine estimation with a specific aim to find out the prevalence of CRF

CKD diagnosis was based on a repeat sample after 2–3 months to be sure of chronicity of renal disease. However, the diagnosis of renal failure .was based on serum creatinine alone (>1.8 mg/dl, upper limit of normal for the laboratory), which is likely to underestimate the magnitude of CKD. This study also evaluated the prevalence of risk factors for CKD, like diabetes, hypertension, renal stone disease, etc. While extrapolating, the authors concluded that the prevalence of ESRD in India will be 785 pmp and the incidence of ESRD will be 160 pmp..

Another source of information on CKD, particularly the pattern of CKD patients presenting to the hospital setting, is a pilot project that was initially started by a group of nephrologists, later the project received endorsement from the National Society of Nephrology. The project, called the ‘Indian CKD Registry’, initiated in June 2005, aimed at finding out many issues related to CKD in

India, including the spectrum of diseases causing CKD. It started with 10 centers as a pilot project involving only adult nephrologists, but currently 152 centers are contributing data to this registry, and recently pediatric nephrologists also have agreed to join. Up until now, the data of approximately 30,000 subjects is in database. Males constitute nearly 70%, with the mean age being approximately 45– 50 years of the adult population. The majority of patients were in stage CKD 4–5 groups (70%). Diabetes mellitus as the cause of CKD was seen most commonly in approximately 30% of the patients, type 2 being responsible in 97% of the cases and duration of diabetes being <10 years in 40% of the cases. CVD was seen more commonly as the stage of CKD progressed; 0.7% in stage 1 to 43% in stage 5. This registry, as it is now, has some limitations, where point data is captured when the patient comes to hospital for the first time. As of now, there is no follow-up data. The data is also affected as the physician or some nephrologists already treat patients before the registry captures patient’s data.

### COST OF THERAPY OF CHRONIC KIDNEY DISEASES :-

CKD has enormous economic impact too. It severely affects the patient’s physical health and quality of life. It also has disruptive effects on lifestyle, relationships, family, emotions, and employment. The disease is known to affect not only the patients but also the caretaker . CKD has a huge economic burden on healthcare systems. The cost of hemodialysis varied from Rs 150 (US \$2) in public facilities to as high as Rs 2000 (US 30) in private facilities (Rs = Indian rupee). Only a limited number of public-funded dialysis and kidney transplant centers are available in India. These are restricted to healthcare facilities in urban areas. According to the Planning Commission Report of the Government of India, 22% of the population in India is below the poverty line and cannot afford the high cost of treatment associated with CKD. According to data from the World Bank, 1.267 billion people fall in the “lower middle” income status, whereas the per capita gross national product of India is US \$5760 (Rs 385920) . According to data from the World Health Organization , the gross national income per capita on the basis of purchasing power parity is US \$5 (Rs 335). Patients have high out-of-pocket (OOP) expenditure in India. To our knowledge, India does not have a reimbursement policy covering all its citizens for health care expenditure. According to the latest available data from the World Bank, the Indian

government is spending only 4% of the gross domestic product on health .Only 32% of the total health expenditure is public.

In the absence of state-funded medical treatment and medical insurance facilities for patients with CKD/ESRD, there are various sources from which patients get money for treatment. In one study, it was concluded that 63% had help from their employer or charity, 26% took loans, and 34% sold assets or pooled their family resources. Obviously, many have more than one source [4]. In spite of all these options, only 3% to 5% of all patients with ESRD in India get some form of renal replacement therapy (RRT). It is not at all difficult to imagine what happens to the rest of them. In all major studies of ESRD from different parts of India (mostly hospital-based studies), men in their 30s were the most common group affected by the disease [5–8]. Thus, an employed patient with ESRD must search for finances for his treatment, not only for direct treatment cost but also for the indirect cost of a loss of job/working days, which is enormous. Thus, many calling CRF a “chronic revenue failure” is not inappropriate, especially in the Indian context.

### Challenges in CKD Management in India :-

**RRT Facilities** For the treatment of any disease, availability of therapy and its affordability are two important issues. Before discussing the cost of RRT in India, we should review the availability of Indian RRT facilities. India currently has 820+ nephrologists; of these, 35.5, 30, 23, 9 and 2.5% are distributed in North, South, West, East and Central India, respectively ( fig. 1 ). Overall, there are 710+ hemodialysis units. The distribution of units according to state is shown in figure 1 .

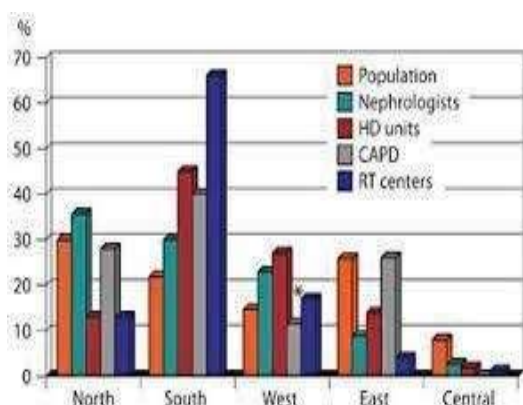


Fig. 1. RRT in India by region. \* CAPD in West India also includes Central India data

Although the first patient on CAPD in India was initiated in 1990, until now only approximately 3000 patients have been initiated on this modality of therapy . Thus, although CAPD is becoming popular and is being used more frequently, it still has a long way to go. Generally, CAPD is used as a last resort as RRT in India. Regarding RT, India has approximately 100 RT centers, most of which are in private setup. No more than 3000 to 4000 RTs are done annually .In the absence of a well-organized cadaver program, living donors constitute the major donor source in India and, unfortunately, a large number of them are unrelated. In spite of an organ transplant bill being passed in 1994, until now only approximately 550 cadaver RTs have been performed in India. Thus, taking altogether (3000 RT + Agarwal: CKD in India S-43 maximum 5000 MHD + maximum 300 CAPD per year), approximately 3.5% of patients with ESRD get any sort of RRT.

### Progress in management and current status and prevention-

Progress in Management of CKD CKD is considered like any other chronic disease when it comes down to developing strategies for prevention and management. Obviously, it is bracketed under one group of chronic diseases for any health planner. Until recently, the Indian public health system did not recognize CKD as being a significant problem. Other noncommunicable diseases like cancer, CVD, and accidents were receiving the main focus of public health plans and programs. Therefore, there was no dedicated funding for prevention and management of CKD by the Health Ministry of the Government of India. The media have often reported about the situation, particularly the infamous kidney racket episode drew the attention of the government towards CKD, and it was felt that CKD and ESRD require focused attention. The government has initiated a process in which it is planning to establish standalone hemodialysis units. These units are being discussed with the aim of establishing in publicprivate partnership an increase of facilities at an affordable cost. Consultations with nephrologists have taken place, and they started the exercise by developing a 12-month training program for dialysis physicians, so as to produce trained physicians to man the dialysis units

(1) Starting awareness of CKD in the medical community and among policy makers and the community at large through the print media, electronic media, radio, and pamphlet distribution at appropriate forums like hospitals, schools, banks,

shopping malls, and so forth. Planning multicentric studies for finding the prevalence of CKD and its causes in 4 corners of the country. Starting the screening of firstdegree relatives of patients with CKD, diabetes, and hypertension in an organized manner, possibly starting in the urban area of the country through a network with a central database. Implementing regular screening for CKD in patients with diabetes mellitus and hypertension. Referring patients with CKD to an appropriate setup for planning management. Educating medical personnel about the algorithmic approach for the management of patients with CKD at the community health center level. Currently in India, CKD is not a priority for the government at all, and initial funding has to come from international agencies like the World Health Organization, World Bank, and International Society of Nephrology (just as in the case of acquired immune deficiency syndrome and noncommunicable diseases like cardiovascular diseases, polio eradication, and so forth). The concept of a “global fund” for CKD, an idea that Schieppati et al have discussed, is still to be accepted . Further, once the prevention program has started and established to some degree, the existing system of health care needs to be used for the prevention program for CKD also. To conclude, CKD/ESRD is a major problem for India, and with increasing diabetes burden, it is going to increase further. Managing the whole population of these patients will be impossible for India, where many other issues are of more priority than CKD. However, money invested now in establishing a prevention program for CKD in India is certainly going to give results in years to come and, ultimately, in the long-run will still be cost effective. Then the saved money can be used for other health care programs. But, in my opinion, this idea will not be easy to impress on current policy makers and the political system of this country.

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