Abstract

Chronic kidney disease (CKD) in the Indian cannot be assessed accurately. The approximate prevalence of CKD is 800 pmp and incidence of ESRD is 150-200 pmp. The commonest cause of CKD is diabetic nephropathy. India currently has ~1200 nephrologists, 1500 hemodialysis units with 10000 dialysis stations and 6000 patients on CAPD. India has ~230 renal transplant centers; 80% in private set-up. Nearly 6000 renal transplants are done annually, cadaver being <10%. Thus, nearly 18000-20000 patients (10% of new ESRD) get renal replacement therapy. Cost of hemodialysis varies between 1000-3000 rupees with an additional cost of erythropoetin being 5000 rupees/month. Cost of CAPD using “Y” set with three exchanges/week is ~25000/month. Cost of transplant procedure is rupees 30000 (Govt. sector) to Rs. 3.0 Lakh (Pvt. sector) with cost of immunosuppression using Tacrolimus, steroid and Mycophenolate is Rs. 15000-400/month. Some illustrious and few fragrant activities in relation to CKD had brought attention of the media and policy makers of this very common group of diseases. Government has initiated a process to establish stand-alone hemodialysis units in the country to increase the facilities at an affordable cost and is in the process of establishing National organ Transplant Program to facilitate transplantation in the country. However, a long way still has to go for establishing all these activities in India. Till that time in a country like India, screening of high-risk individual for CKD and its risk factors is best bet.

Key words: CKD, India, Magnitude, Issues involved

The CKD burden is increasing rapidly worldwide. At the end of 2004, 1,78,3000 patients worldwide were receiving treatment for ESKD, of which 77% were on dialysis and 23% had a functioning renal transplant (RT) and this number is increasing at a rate of 7% every year. If the current situation prevails, the global ESRD population will exceed 2 million by 2010. The average incidence of ESKD in developing countries is 175 per million populations, which is lower than what is reported in the developed world. This has been attributed to racial and ethnic diversity, which is also reflected in the disparity in the incidence of ESRD between different populations within the developed nations.

CKD in India

In the absence of a renal registry, the exact disease burden of CKD/ESKD in the Indian population cannot be assessed accurately. The most definitive population based study from northern India, using multistage cluster sampling technique, in which serum creatinine and urine sample was examined in every subject studied, prevalence of CKD stage-3 and beyond was found in 0.79% subjects out of 4972 subjects examined. While extrapolating, authors concluded that prevalence of ESKD in India will be 785/pmp and incidence of ESKD will be 160/pmp. The commonest cause of CKD in this population-based study was diabetic nephropathy (41%). Another study from southern India reported a prevalence of impaired kidney function (defined as eGFR<80ml/min) to be 8.6 per thousand of the screened population of 25000 and then 13.9 per thousand populations in a new survey when they subsequently screened another 21500 people. The prevalence of any type of renal disease (not CKD) was seen in 0.68% and CKD was seen in 0.16% in the initial survey. However, there was difference from the study from northern India that serum creatinine was not done in every subject. Another recent study in an urban population from central part of India revealed a similar disease burden like extrapolated disease burden from north Indian study with average crude and age-adjusted incidence rates of ESKD of 151 and 232 per million population, respectively. However, this study was limited by possibility of referral bias and population migration since it was based on ESKD patients evaluated to a particular hospital and with a premise that all ESKD in that population area were coming to
this hospital. The domiciliary screening program for CKD by a trust in south India has reported the prevalence of CKD stage 5 to be 0.87 per thousand (870 per million).

Another data generated on CKD in India is by a study titled “Screening and Early Evaluation of Kidney disease” (SEEK) study started in 2006 by a group of nephrologist, primarily initiated by nephrologist from Brigham & Women’s Hospital & Harvard Medical School, USA and few other nephrologist from India. The study has primarily a camp approach for inclusion of subjects. The data of SEEK is being presented in national society conference for last two years. Till last presentation approximately 6000 adult subjects have been screened from 21 centers from 53 community camps. In 93% patients serum creatinine and urine examination could be obtained. This study reported a very high prevalence of 17.4% of CKD using standardized eGFR formula, 17 fold higher than other community based reports from India. The data of SEEK is as of now unpublished.

Combining all the available literature, both published and unpublished, from various sources, it will not be unwise to comment that yearly incidence of ESKD in India is approximately 150-200/pmp and diabetes is probably the commonest cause of CKD in India also, contributing to approximately 30-40% patients. Further, with current life expectancy of 63 years being increasing further, with time magnitude of CKD is going to increase. Any further study for finding our magnitude of problem of CKD/ESKD in India must be multicentric, involving all parts of India, both rural and urban population and following a robust community based epidemiological strategies. Otherwise, we are likely to get data, which will not be different from what is already known.

**Challenges in management of CKD in India**

**RRT facilities in India**

India currently has ~1200+ nephrologist in the country. Of these nephrologist, north, south, west, east and central part of India have 35.5%, 30%, 23%, 9% and 2.5% nephrologist respectively. There is 1500+ hemodialysis units in the country. Within these hemodialysis units, dialysis stations are 10000+, with average number of station per unit being four (range 2 to 24). Average number of dialysis per station being twice in a day and average number of dialysis being twice per week, we can reasonably calculate that in India, nearly 60000 (10% of prevalence of ESRD) patients are being hemodialysed. Nearly 85% centers are in a private set-up who also do maintenance hemodialysis (MHD). As against private sector, government sector currently is not providing MHD and only do RT oriented hemodialysis. Though first CAPD patient in India was initiated in 1990, currently approximately 6000 patients are on this therapy. CAPD is becoming popular and is being used more frequently, but it still has a long way to go. In a large number of patients, CAPD is not taken as a choice of therapy but taken as a last resort. Large number of patients actually drop out of CAPD therapy due to combination of reasons like death on therapy, technique failure, stopping therapy due to economic reasons and getting renal transplant. The guess is that the commonest cause is death on therapy. Renal transplant (RT) is best modality of treatment for patients of ESRD. It is not only cheaper on long run but also provide better survival with good quality of life. In the RT scene, India has 230+ RT centers; mostly in private set-up and nearly 6000 RT are done annually. In absence of well-organized cadaver program, living donor constitutes major donor source and unfortunately a large number of them are unrelated. Inspite of organ transplant bill being passed in 1994, till now only approximately 1500+ cadavers RT have been performed in India. Thus, taking altogether (6000 RT + 60000 MHD + 6000 CAPD in a year), nearly 70000 patients (10-15% of all ESRD) in India get RRT. Thus, it is clear that considering the magnitude of the problem of CKD/ESRD in India, availability of RRT is limited and also not distributed equally in different part of the country.

Coming to the number of physician getting post doctorate training in nephrology in India; the data is disheartening. There are 50+ doctorates in medicine (DM) in Nephrology seats in India where physician get entry through all India basis entrance examination. Similarly, national board of examination, a central body under ministry of health and family welfare government of India takes 60+ physicians for training for Diplomate National Board (DNB) in nephrology in various institutions, mainly private. Both courses are three years courses and trained physician is qualified as nephrologist to provide RRT in India.
Progress in Management of CKD

CKD is considered like any other chronic disease when it comes down to develop strategies for prevention and management. Obviously, it is bracketed under one group of chronic diseases for any health planner. Till lately, public health system was not recognizing CKD as a significant problem in the country. Other non-communicable diseases like cancer, cardio-vascular diseases and accidents were getting main focus in public health plans and programmes. Therefore, there is no dedicated funding for prevention and management of CKD in Health Ministry, Government of India. Some media report, particularly the infamous kidney racket episode drew the attention of Government towards CKD and it was being felt that CKD and ESRD require focused attention. There had been academic activities started in 2005 on different aspects of CKD. Important meetings were organized by AIIMS in collaboration with ICMR, Planning Commission and International Society of Nephrology in 2005 and 2008. These meetings made specific recommendations about CKD prevention. Further, Government has also realized the increasing financial burden on account of dialysis and other related treatment for its central government health services (CGHS) beneficiaries and decided to go for experimenting programme of hemodialysis on internationally approved protocol based stand-alone dialysis unit pattern. All these actions have created awareness in public health system particularly at policy maker and planner level that CKD require focused attention. However, seeing the magnitude of CKD, there are more actions, required at governmental level for CKD problem in India.

Government has initiated a process in which it is planning to establish stand-alone hemodialysis units in the country. These units are being discussed with an aim of establishing in public-private partnership to increase the facilities at an affordable cost. Consultation with nephrologist have taken place & they started the exercise on developing 12 months training programme for dialysis physician, so as to produce trained physician to man these dialysis units. This program is now running in 2nd year and having reasonable response. Shortage of nephrologist necessitated this exercise because a nephrologist is essential for a dialysis unit. Negotiations are going to find suitable partner for standalone dialysis units. This exercise is aiming at prevention & maintenance of patient’s condition, so that they can go for renal transplantation as & when a suitable organ/donor is available. Till now central government has established one such unit and Delhi state government has established three such units.

On the RT side, government has started National organ Transplant Program (NOTP) to facilitate both living related and cadaver organ transplantation in the country. Nodal office has been created at Safdarjung hospital and dedicated budget has been provided for it. N.O.T.P. will take care of diseased organ donation, centralized organ procurement & distribution system, and capacity building for organizing renal transplantation unit in the country. Coupled with amendments in Transplantation of Human Organ Act, this action of Ministry of Health and Family Welfare (MOHFW) will reduce the gap between demand & supply of organs, especially kidney, thus providing a final treatment to CKD patients.

Progress in the prevention of CKD

Prevention of any illness needs patience. It should also be a priority area for any government. From that side, CKD prevention is far from away. There are certain facts, which need to be kept in mind. Public health expenditure in India is around 1% of G.D.P., with central share as 30% & States share as 70%. As G.D.P. of India is increasing regularly, even if public health expenditure is being maintained at 1% of GDP, the actual public sector expenditure showing an increasing trend every year gradually. However, this increase is very low in comparison of need & requirement of health sector. Therefore, with limited budgetary support, we are organizing prevention programme. Vertical health and family welfare programmes are getting adequate synergisation at operational levels through National Rural Health Mission (NRHM). Focused Information, Education and Communication (IEC) campaign for CKD is being planned through various related national programmes i.e. National Programme of diabetes mellitus, cardiovascular disease (CVD), Stroke and NOTP. All secondary prevention activities are being taken care through National Programme of diabetes, CVD, Stroke & National Rural Health Mission (NRHM). Government had initiated NRHM (2005-2012) to provide effective healthcare to rural population throughout the country with special focus on states, which have weak public health indicators and with an aim to raise public spending.
on Health from 0.9% of GDP to 2-3% of GDP. It does include prevention and control of non-communicable diseases. However, CKD is still not in the focus. It can be borne by the fact that government had launched this year a pilot project of the National Program for Prevention and Control of Diabetes, Cardio-vascular Diseases and Stroke (NPCDS) is seven States of the country. Total plan allocation envisaged for ongoing five-year plan is likely to be $ 3.8 million. Being common risk factors, CKD could only find an indirect focus. Web sites of health India does not have prevention of CKD as a dominant disease on its home page (http://healthy-india.org/), while diabetes, heart disease, cancer, hypertension and strokes are there. Thus, India has to go a long way, before CKD & ERSD get their rightful place in preventive programmes of Government of India.

In a recent study conducted by AIIMS in the first-degree relatives of non-diabetic CKD patients has shown a very high incidence of CKD and its risk factors (Unpublished data). The prevalence of CKD was 9.94%, low eGFR 5.43% and proteinuria 6.47%. The prevalence of hypertension, diabetes, impaired fasting glucose and hyperuricemia was 31.37%, 4.19%, 22.36% and 14.4% respectively. Among those who were detected to have kidney disease or its risk factors in this study, the awareness of their condition was very low even though they had a family member with ESRD. Thus, in a country like India, where screening and prevention of CKD still has to take a start, screening of high risk individual for CKD and its risk factors is best bet.

To conclude, chronic kidney disease is a problem of epidemic proportion in India and with increasing diabetes burden, hypertension and growing elderly population it is further going to increase. Managing patient population of CKD even with better organization in RRT will be impossible for India. The money invested at this time in establishing prevention program for CKD in India is definitely going to give results in years to come and ultimately on long-run will still be cost effective. This money can be utilized for other health care programs. However, it requires a lot of data & professional lobbying with various policy makers / MOHFW, Government of India.

References:

Author’s biography

MD (Medicine)1984 from KG’s Medical College Lucknow, DNB (Nephrology) 1987 from AIIMS, FRCP (Medicine) 2007 Royal College Edinburgh

✓ President Institute Kidney Foundation of Delhi
✓ Member of ISN-CKD Task Force 2011 onward
✓ Member of ISN-India subcommittee 2011 Onwards
✓ Council Member International Society of Nephrology for Asian Region 2011 - 2016
✓ Advisory board member of Dialysis Physician Course of IGNOU and Govt. Of India
✓ Advisory Board member of National organ Transplant Program, Govt. Of India
✓ Advisory Board member of CKD program Govt. Of India
✓ Convenor Indian CKD Registry
✓ Principal Investigator for Bio-repository Facility, Department of Nephrology at AIIMS

Area of Interest
1. Hepatitis and TB during renal replacement therapy
2. Clinical transplantation
3. Chronic kidney disease, epidemiology, prevention and RRT in India

ORATIONS
- 2013 MS Ameresan Oration
- 2013 Nephrology Chair and Balaji Gold Medal at SVIMS, Tirupati.
- 2011 “Swatha Bharat Samman” by Zee News Network and LIC
- 2011 NN-Gupta-CG Agarwal Oration” by KG’s Medical College, Lucknow
- 2010 Silver Jubilee Oration in IGNOU
- 2009 Dr. Hari Vaishnav by Delhi Chapter API
- 2009 Dr. LK Bhutani by AIIMS
- 2008 JM Patel by Indian Society of Organ Transplantation
- 2007 Khullar by Indian Society of Nephrology
- 1998 Bansal by Indian Society of Nephrology

FELLOWSHIPS
- 2009 American Society of Nephrology
- 2009 WHO Fellowship to Berlin for World Organ Donation Day
- 2008 National Academy
- 2004 Rockefeller Foundation and International Society of Nephrology fellowship to Italy
- 2003 Indian College of Physician
- 2000 Indian Society of Nephrology
- 1999 International Medical Science Academy
- 1995 Commonwealth for Manchester, UK

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- 2010 World Organ Donation Day

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REVIEWED BOOK FOR NEJM ON CKD, IJMR ON HCV AND HEMODIFILTRATION
REGULAR REVIEWER OF many international and National Journals

EDITORIAL RESPONSIBILITIES
- Member editorial board
  - Nephron Clinical Practice
  - World Journal of Transplantation
  - World Journal of Nephrology
  - International J of Pediatric Nephrology and Urology
- Associate Editor
  - Indian Journal of Nephrology
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