

HEALTH POLICY FOR KIDNEY DISEASES IN PAKISTAN- A NEED OF TIME TO CONSIDER

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All kidney diseases if not treated early, culminate rapidly into End-stage kidney disease (ESKD). ESKD needs lifelong supportive care in the form of hemodialysis (HD), peritoneal dialysis (PD), and kidney transplants. All of these treatment modalities have an enormous impact on patient quality of life and put a financial constraint on patient life and the country's economy.^{1,2} In Pakistan, where the health system budget continues to shrink, resource-intensive therapy like hemodialysis (the major mode of treatment in Pakistan) will need to find new efficiencies. CKD is on rising all over the world for distinct reasons depicted in literature.³

In Pakistan, there is a paucity of data to make an accurate judgment regarding the incidence, prevalence, and demography of CKD.⁴ The prevalence of CKD is reported at around 17.5% in two studies.^{5,6} The other important aspect of CKD is the information about the actual causes of CKD in Pakistan. Very few hospital-based studies are available that were mostly done in large cities of the country.^{7,8} The data showed quite different demography of CKD in Pakistan. The most common cause of CKD is chronic kidney disease of unknown etiology (CKDu) followed by CKD due to kidney stones. and the most important fact about these two diseases is that both are likely preventable.

Pakistan has a population of 207 million with an annual growth rate of 2.7%. Although there is rapid urbanization in the last 20 years as observed in other parts of the world as well, still the majority of the population is residing in rural areas, Figure 1. In these areas, the circumstances are vastly different and health infrastructure is very weak due to which no data is available regarding CKD.

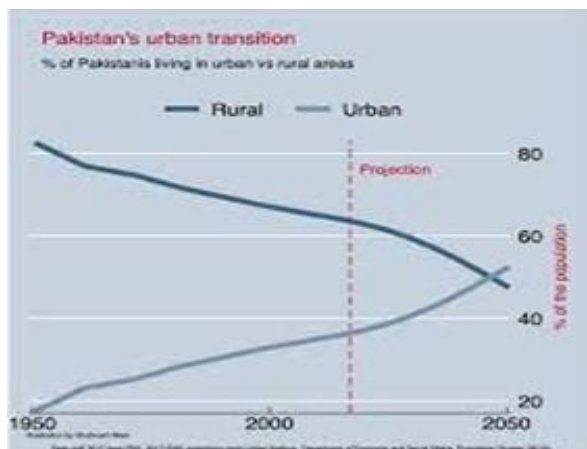


Figure 1. The transition of the Pakistani population¹⁵

As we discussed earlier, CKD because of kidney stones or of unknown etiology is reportedly high in Pakistan. The burden of kidney stones constitutes 60% of the urological workload. In a duration of 40 years (from 1974-2014) 83,000 adult patients with kidney stones were treated at SIUT (Sind Institute of urology and transplantation) and only in years 2013 did more than 4000 procedures in Karachi and while more than 2000 were done at Sukkur.⁹ Similarly, CKDu is prevalent in agricultural communities in different parts of the world is also contributes to significant numbers of CKD in Pakistan.¹⁰ Many occupational and environmental risk factors have been hypothesized like heat and dehydration, pesticide exposure, and

heavy metal contamination in drinking water, there is a dire need to explore these causes in Pakistan as well.

Now based on reported prevalence, if we calculate the number of patients with CKD in our rural and urban populations along with the CKD due to stone and CKDu, the numbers are strikingly high (**Table 1**). To combat this increasing population of CKD, there is no thought about “prevention” at any level (physician, institution, and governmental) and our sole reliance is on hemodialysis, followed by kidney transplantation and truly little peritoneal dialysis. Unfortunately, due to the unavailability of any registry, it is hard to comment on the actual size and volume of the contribution of these treatment modalities at the country level. The only document about hemodialysis is published by Prof Jafar Naqvi from The National Kidney Foundation of Pakistan (in the form of a registry), this data grossly underestimates the dialysis services and patient population in Pakistan.¹¹

Table 1. Distribution of the population and CKD, CKDu, and CKD with stones in rural and urban areas of Pakistan: a volume estimate

Population (207,800,000)	Population statistics	Population distribution
Rural population (70%)	$207,800,000 \times 0.7 =$	145,460,000
Urban Population (30%)	$207,800,000 \times 0.3 =$	62,340,000
Rural CKD (17%)	$145,460,000 \times 0.17 =$	24,728,200 or nearly 2.5 crore
Urban CKD (17%)	$62,340,000 \times 0.17 =$	10,597,800 or 1.5 crore
CKDu in Rural (26%)	$24,728,200 \times 0.26 =$	6,429,332
CKDu in Urban (26%)	$10,597,800 \times 0.26 =$	2,755,428
Kidney stone disease in Rural (17%)	$24,728,200 \times 0.0.17 =$	4,203,794
Kidney stone disease in Urban (17%)	$10,597,800 \times 0.17 =$	1,801,626

Hemodialysis is now recognized to have economical constraints and environmental hazards.¹² It consumes a huge quantity of drinking water and electricity, produces a large volume of solid waste, and indirectly adds to global warming due to increased production of CO₂ by fossil-based fuel burning in Pakistan (mostly coal and natural gas). In this background, if we focus on the water and population dynamics in the last 50 years, there is a severe deprivation of water availability from 6000 cubic meters to 1000 cubic meters, on the contrary, the population grew from 50 million to 200 million, Figure 2. In the future, both variables will proceed in the same direction faster if preventive models do not have opted or alternative strategies will not be planned.¹³

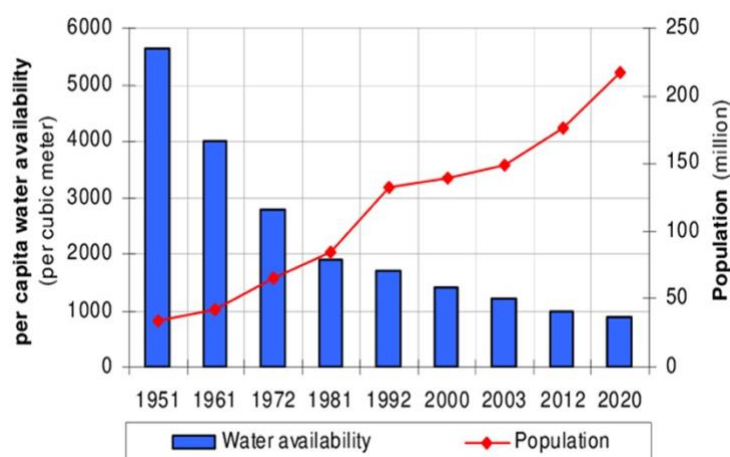


Figure 2: Growth of Pakistani population and decline in the availability of water over time from 1951-2020.¹⁶

There is now a trend to open dialysis units by Government and NGOs. These dialysis units are opening without any prior planning and infrastructure. On the contrary, renal transplantation, peritoneal dialysis, conservative management for certain groups of patients, and lastly the prevention of preventable kidney diseases in our population (kidney stone and CKD u) are other valuable options that are badly neglected. There must be an idea and calculation of need and demand as well as another alternative for renal replacement therapy according to the age, gender, area of location, supply of water and electricity, and availability of trained staff.¹⁴

Pakistan is among the top countries facing the hazards of changing environment and global warming, we suggest opting for the following strategies and planning. We should look into the prevention strategies of two important and preventable diseases of our population i.e., CKDu and renal stone disease, and start to do research and investment in treatment in both rural and urban areas. Along with this, there is a need to reduce the total reliance on hemodialysis (which needs a lot of water and electricity) and need to expand peritoneal dialysis and transplantation.

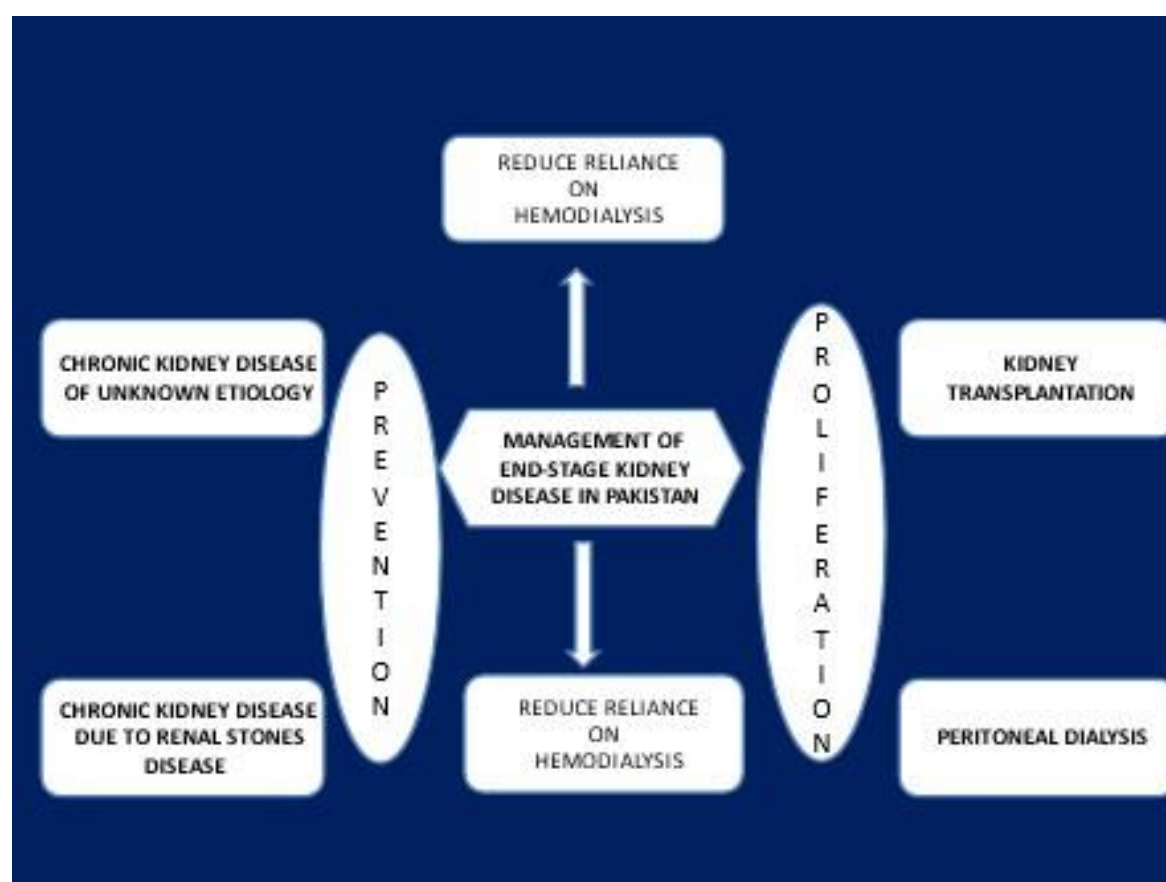


FIGURE 3: Strategy to combat end-stage kidney disease with attention to areas to areas of prevention and expansion.

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DOI: 10.53778/pjkd64210

Received: 25 Nov, 2022 and accepted 15 Dec, 2022

PJKD 2022;6(4):2-5

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