

Need Assessment of Renal and Liver Transplant in Pakistan

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Chronic kidney and liver diseases have become significant public health challenges, demanding comprehensive and accessible treatment options for affected individuals. There is alarmingly high prevalence of diabetes (26.7%) and hypertension (18.9%) in Pakistan,¹ leading causes of End Stage Renal Disease. Additionally, the national prevalence of hepatitis C in Pakistan is 4.8%, making it the second largest worldwide. Chronic hepatitis often ends up in cirrhosis and hepatocellular carcinoma, necessitating liver transplant.² Pakistan faces a significant shortage of renal and liver transplant centers, creating challenges for the patients. Contributing factors are deficiency of specialized infrastructure, limited trained medical personnel, and financial constraints. Renal transplant costs range between PKR 1.5–2.5 million, while liver transplants can cost over PKR 5 million, making them inaccessible to the most.

The prevalence of chronic kidney disease in Pakistan is 16.7% ranging from 12.5% to 29.9% in reported studies with highest prevalence in patients above 50 years of age (43.6%). The most common causes are Diabetic nephropathy (40-50%), hypertension (30-40%), glomerulonephritis (10-15%), chronic kidney disease of unknown etiology (16.6%), renal stones (12.4%) and polycystic kidney disease (5-10%).²

Total contribution of CKD to Disability adjusted life years is 1.22%.⁵ Deaths attributed to CKD out of total deaths are 2.36%.² Total number of CLD cases

is estimated at 1.5 billion globally.⁶ The prevalence of chronic liver disease in Pakistan ranges from 2-29% with Hepatitis B, Hepatitis C and NAFLD (Non-Alcoholic Fatty Liver Disease) having frequency of 2-3%, 5-7% and 15-29% respectively with highest rates reported in individuals above 40 years of age.⁷ CLD contributes 1.64% to DALY (disability adjusted life years) and deaths attributed to chronic liver disease out of total deaths are 2.36% in Pakistan.⁵

Pakistan lacks a formal national registry for renal transplant.³ Incidence of ESRD is 100-150 per million population while the rate of dialysis is 15/million population and the rate of transplant is 4-5/million population indicating a huge gap.⁹ Given the national incidence of CKD, almost 12,000 to 20,000 people in Punjab, 5000 to 8000 Sindh, 4000 to 6000 Khyber Pakhtunkhwa, 1500-2000 Baluchistan and 236-354 in Islamabad develop End Stage Renal Disease annually.⁴ The maximum capacity of the available liver transplant programs in Pakistan is only 500 while almost 5000 patients need liver transplantation every year indicating a vast gap.¹⁰ Given the national prevalence of chronic liver disease, almost 6 million people in Punjab, 2.5 million Sindh, 1.9 million Khyber-Pakhtunkhwa, 7 lacs Baluchistan and 1 lac people in Islamabad have End Stage Liver Disease.³ So far, the central repository to gather liver transplant-related data is not available in Pakistan.¹¹

There are 12 public and 20 private registered centers with Punjab Human Organ Transplant Authority (P-HOTA) for kidney transplant. Considering registered transplant centers (32), 1 center needs to cater for 372-625 patients annually.¹² There are 990 patients

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DOI: <https://doi.org/10.35787/jimdc.v13i4.1343>

with end stage renal disease registered with PRDS.¹³ Islamabad has eight hospitals with renal transplant services. There are 2 public and 3 private hospitals registered for liver transplant with P-HOTA.¹² There are two registered health facilities for liver transplant in Islamabad. Considering registered transplant centers, one center needs to cater for 1 million patients in Punjab and 50,000 in Islamabad. There are 23 registered renal/kidney transplant surgeons and 10 registered liver transplant surgeons with P-HOTA.¹²

Around 22,000-35,000 patients /year have unmet need for renal transplant in Pakistan.⁹ The main hurdle to avail liver or renal transplant services in the developing countries is financial constraint.¹⁴ Lack of awareness and non-availability of organ donors among patients also contributes towards poor accessibility for these services. In Pakistan, 65% of the population is rural, 50% lives below the poverty line \$2 a day and the government spend only 1.2% of GDP on health leading to accessibility issues for such services.¹⁴

Chronic kidney disease was ranked as the 10th leading cause of mortality in 2020 with the expectation to become fifth leading cause of life lost by 2040. It has been projected that low- and middle-income countries (LMICs) will bear > 70% of the burden of End Stage Renal Disease by 2030.¹⁵ Currently, people receiving renal replacement therapy exceeds 2.5 million globally and it is expected to double to 5.4 million by 2030.¹⁵ Likely demand for liver transplants will increase 10% in 10 years and 23% in 20 years. Total costs of liver transplants are forecast to increase 33% in 10 years and 81% in 20 years.¹⁶ There is a dire need to introduce subsidized transplant programs and expand health insurance coverage for organ transplants and collaborate with NGOs for funding and resource mobilization. Addressing infrastructure gaps, financial barriers, and workforce shortages will not only save lives but also ensure equitable healthcare delivery for all

References

1. Azeem S, Khan U, Liaquat A. The increasing rate of diabetes in Pakistan: A silent killer. *Annals of medicine and surgery*. 2022 Jul 1;79. <https://doi.org/10.1016/j.amsu.2022.103901>
2. Elahi A, Ali AA, Khan AH, Samad Z, Shahab H, Aziz N, Almas A. Challenges of managing hypertension in Pakistan-a review. *Clinical Hypertension*. 2023 Jun 15;29(1):17. <https://doi.org/10.1186/s40885-023-00245-6>
3. Saleem U, Aslam N, Siddique R, Iqbal S, Manan M. Hepatitis C virus: Its prevalence, risk factors and genotype distribution in Pakistan. *European Journal of Inflammation*. 2022 Nov 30; 20: <https://doi.org/1721727X221144391>.
4. Imtiaz S, Alam A. Epidemiology and demography of chronic kidney disease in Pakistan-A review of Pakistani literature. *Pakistan Journal of Kidney Diseases*. 2023 Mar 26;7(1):2-7. <https://doi.org/10.53778/pjkd71209>
5. Global, regional, and national burden of chronic kidney disease, 1990–2017: a systematic analysis for the Global Burden of Disease Study 2017.; 395(10225):709-733. [https://doi.org/10.1016/s0140-6736\(20\)30045-3](https://doi.org/10.1016/s0140-6736(20)30045-3)
6. Cheemerla S, Balakrishnan M. Global Epidemiology of Chronic liver Disease. *Clin Liver Dis (Hoboken)*. 2021 Jun 4;17(5):365-370. <https://doi.org/10.1002/cld.1061>. PMID: 34136143; PMCID: PMC8177826.
7. Butt AS. Epidemiology of viral hepatitis and liver diseases in Pakistan. *Euroasian journal of hepatogastroenterology*. 2015 Jan;5(1):43. <https://doi.org/10.5005/jp-journals-10018-1129>
8. Saeed F, Sardar M, Rasheed K, Naseer R, Ronald M, et al. Dialysis Decision Making and Preferences for End-of-LifeCare: Perspectives of Pakistani Patients Receiving Maintenance Dialysis. *Journal of Pain and Symptom Management*; 60(2):336-345. <https://doi.org/10.1016/j.jpainsymman.2020.03.009>
9. Zafar MN, Rizvi SA. Providing “Free” Access to Dialysis and Transplant to the Disfranchised. A Sustainable Model for Low and Low Middle-Income Countries (LMICs). *Transplant International*. 2023; 36:11290. <https://doi.org/10.3389/ti.2023.11290>
10. Dogar AW, Ullah K, Ochani S, Ahmad HB. Evolving liver transplantation in Pakistan: future challenges. *Annals of Medicine and Surgery*. 2022 Oct 1;82. <https://doi.org/10.1016/j.amsu.2022.104669>
11. Ullah K, Dogar AW, Mago A. The Need for a Liver Transplant Registry in Pakistan. *Journal of the College of Physicians and Surgeons--Pakistan: JCPSP*. 2022

- Nov 1;32(11):1511.
<https://doi.org/10.29271/jcsp.2022.11.1511>
12. The Government of Punjab. Human Organ Transplant Authority. Available at <https://phota.punjab.gov.pk/liver-reg-hospitals>
 13. Maryam Javed, Azhar Ali Khan, Mateen Akram, Waqar Ahmed. Pakistan Renal Data System (PKRDS): First Annual Report Pakistan journal of kidney disease.2020. <https://doi.org/10.53778/pjkd4434>
 14. Dar FS, Arsalan M, Haq IU, Rashid S, Khan MY, Haider S, Dar MM, Akbar N. Liver transplantation: a right or a privilege? Sustainable liver transplant financing with an innovative model for the developing world. In *Transplantation Proceedings* 2023 Mar 1 (Vol. 55, No. 2, pp. 402-407). Elsevier. <https://doi.org/10.1016/j.transproceed.2023.02.013>
 15. Wijewickrama E, Alam M R, Bajpai D, Divyaveer S, Iyengar A, Kumar V, et al. Capacity for management of Kidney failure in the International society of Nephrology South Asia region; a report from 2023 ISN Global Kidney HealthAtlas (ISN-GKHA). *Kidney International supplement*.2024;13(1):123-135. <https://doi.org/10.1016/j.kisu.2024.01.007>
 16. Habka D, Mann D, Landes R, Soto-Gutierrez A. Future Economics of Liver Transplantation: A 20-Year Cost Modeling Forecast and the Prospect of Bioengineering Autologous Liver Grafts. *PLoS One*. 2015 Jul 15;10(7):e0131764. <https://doi.org/10.1371/journal.pone.0131764>. PMID: 26177505; PMCID: PMC4503760