

Short Communication



Liver Transplant Services in Pakistan: Potential of Dr. Akbar Niazi Teaching Hospital, Islamabad

Usman Waheed¹, Yasir Khan Niazi²

¹Head, Department of Allied Health Sciences, Islamabad Medical and Dental College, Islamabad, Pakistan

²Chief Executive Officer, Islamabad Medical and Dental College/Dr. Akbar Niazi Teaching Hospital, Islamabad, Pakistan

Author's Contribution

^{1,2} Both authors have contributed equally to the conception, literature search, manuscript drafting, editing, review, and revision for important intellectual content

Funding Source: None

Conflict of Interest: None

Received: Jan 5, 2024

Accepted: Mar 27, 2024

Address of Correspondent

Usman Waheed, Ph.D.
Department of Allied Health Sciences, Islamabad Medical and Dental College, Islamabad
E: drusman.waheed1@gmail.com

ABSTRACT

Liver transplantation represents a critical intervention in addressing end-stage liver diseases, offering patients a chance at improved quality of life and prolonged survival. However, its accessibility and success are influenced by several factors including societal values, healthcare infrastructure, and legislative frameworks. This article discusses the current scenario of liver transplantation services in Pakistan, focusing on the potential role of Dr. Akbar Niazi Teaching Hospital (ANTH) in Islamabad. Despite advancements in transplant techniques, the accessibility of transplantation services in Pakistan is hindered by various factors, including financial limitations, scarce healthcare resources, and ethical concerns surrounding organ donation. The emergence of living donor liver transplantation (LDLT) has provided a partial solution, but challenges persist, mainly regarding the shortage of trained medical professionals and the absence of a centralized registry for transplant data. Legislative efforts, such as the Transplantation of Human Organs and Tissues Ordinance 2007, aim to regulate transplant activities and prevent organ trafficking. However, the lack of coordination and uniformity among provincial regulatory frameworks complicates the transplantation services. The article also highlights the importance of public-private partnerships (PPPs) in expanding access to transplantation services, with ANTH poised to become a hub for organ transplantation and medical tourism. It also addresses the need for political leadership to support legislative reforms and funding efforts to enhance organ donation programmes, ultimately improving patient outcomes and alleviating the burden of liver disease in Pakistan.

Key words: Liver transplant, Hepatitis, Organ transplant

Cite this editorial as: Waheed U, Niazi YK. Liver Transplant Services in Pakistan: Potential of Dr. Akbar Niazi Teaching Hospital, Islamabad. Ann Pak Inst Med Sci. 2024; 20(1): 125-129. DOI: <https://doi.org/10.48036/apims.v20i1.1052>.

Organ transplantation represents a significant advancement in medical science, contributing substantially to enhanced patient survival and improved quality of life. Its profound positive effects extend beyond individual health outcomes, exerting a major influence on public health and alleviating the socio-economic burden associated with organ failure. Among the various organs transplanted, the liver stands out as the second most commonly transplanted organ on a global scale, following the kidney. This underscores the widespread adoption and success of liver transplantation as a life-saving medical intervention, affirming its pivotal

role in addressing critical health challenges worldwide. In 1963, Starzl *et al.*, conducted the inaugural human liver transplant in Denver, Colorado. This historic surgical procedure involved a 3-year-old boy, followed by subsequent liver transplants in a 48-year-old and a 67-year-old male. However, despite these early efforts, none of the three recipients survived beyond a span of 23 days' post-transplantation.¹ This pioneering attempt, while not immediately successful, laid the foundation for the evolution of liver transplantation techniques and contributed significantly to the advancement of organ transplantation as a distinct specialty.²

Despite being the most common form of organ donation, deceased donor liver transplantation was not widely accepted in particular countries due to societal values and belief systems. In addition, there were not many donor organs available. Consequently, transplant candidates spent more time on waiting lists, which accelerated the progression of liver disease and enhances wait-list mortality. Numerous developments were brought about by this shortage, one of which being the emergence of living donor liver transplantation (LDLT), which entails removing a portion of a live donor's liver and transplanting it into the recipient.³ This translated into an ever expanding application of LDLT in many parts of the world including Pakistan.⁴ On the other hand, a few Asian countries, including Iran and China, established some of the world's largest deceased donor programmes.⁵

Pakistan is a developing country with a population of approximately 240 million. As a developing country, Pakistan's healthcare system is facing serious challenges like scarcity of resources, insufficient and non-trained human resources, high burden of communicable, non-communicable diseases, and systemic mismanagement.⁶ Since 1947, Pakistan has continued to implement the British healthcare system, which is based on the 'Beveridge model'.⁷ Here, primary, secondary, and tertiary levels make up the three tiers of the healthcare system. The public and private sectors collaborate to deliver the best care possible, but overall healthcare costs have made it difficult to deliver high-quality healthcare. This is particularly true for the government system, which has spent 0.5-0.8% of GDP (gross domestic product) on healthcare over the past ten years, much less than the 6% GDP recommended by the World Health Organization (WHO).⁸

Pakistan bears a major burden of liver diseases and cirrhosis is among the 10 leading causes of deaths in Pakistan.⁹ About 150,000 people die from viral hepatitis each year, either as a direct cause of death or as a comorbidity. This indicates that more than 400 Pakistanis lose their lives to hepatitis every day.

According to data from the WHO, the death rate from liver disease in Pakistan is 3.76%.¹⁰ Every year, 150,000 patients at the end-stage of organ failure and waiting for organ transplants, pass away.¹¹ The high frequency of viral hepatitis in Pakistan¹² is the primary cause of this number's constant rise, which is made more difficult by inadequate preventive measures and inadequate health facilities. Liver transplantation is the only fully curative

therapeutic option available to a patient after they have end-stage liver disease with complications.¹³

The year 2003, marked a significant moment in Pakistan's medical history with the successful completion of Pakistan's inaugural liver transplant procedure. This groundbreaking surgery took place at the Sindh Institute of Urology and Transplantation (SIUT), in collaboration with King's College Hospital, London.¹⁴ Before that, patients generally travelled to India and China where it was much cheaper to undergo transplantation than the United States and Europe. Even this option could be availed by very few who could afford transplantation surgery and arrange for frequent follow-ups.

The second liver transplant unit was established in 2010 at the Shaikh Zayed Hospital, Lahore, where the first successful liver transplant was performed in August 2011.¹⁵ In April 2012, the first-ever private-sector living donor liver transplant procedure was performed successfully at the Shifa International Hospital, Islamabad.¹⁶ In the wake of these institutions, many private and provincial government institutes initiated offering liver transplant treatments, transforming health facilities and establishing technological expertise to continue the programme. Some prominent examples are Shifa International Hospital,¹⁷ with over 1,000 LDLTs, Pir Abdul Qadir Shah Jeelani Institute of Medical Sciences, Gambat,¹⁸ that has completed almost 750 LDLTs, and Pakistan Kidney and Liver Institute & Research Center,¹⁹ which has performed over 400 LDLTs in the past few years. In the Pakistan Armed Forces, to address this emerging medical concern, an Army Liver Transplant Unit (ALTU) was established in July 2015, in Rawalpindi. The first LDLT surgery was carried out in January 2016, in association with a group of specialists from University Hospital Birmingham, UK.²⁰ The living donor liver transplantation procedure in Pakistan costs approximately USD 45,000.²¹ Due to financial constraints and limited resources, the majority of patients from such low-income countries cannot afford the expensive treatment procedures.²² The liver transplant-providing institutes in Pakistan are mainly established in the private sector. A considerable proportion of the Pakistani population is poor and are unable to afford this costly procedure. As a result, these patients are just offered supportive treatment, and unluckily they die without undergoing liver transplantation.

Organ transplantations have the potential to save the lives of thousands of patients across the globe each year.

However, exploitative organ trade that is widespread in developing countries poses a grave threat to the lives of organ donors. Every year, individuals from the US, Europe, the Middle East, and Australia, travel to low income countries in search of financially vulnerable donors. Commercialized transplantation is a much discussed and maligned ethical minefield within the transplant community, often exacerbated by the absence of relevant policies and legislative frameworks.

Initially there were no regulating bodies to monitor the transplantation in Pakistan. Ad-hoc transplant activities were performed within the confines of local guidelines, with guidance and inputs from pioneering experts and foreign policies. As experience accumulated in subsequent years and through gradual transformative education of the involved community, legislated governance of transplantation programme becomes necessary; particularly to publicize national stance on commercialization, penal offences, strengthen consenting procedures, and improve procurement and allocation regulations. Cognizant to the scenario, the Government of Pakistan successfully promulgated a legislation in 2007 aimed at ensuring correct transplantation norms:

- Transplantation of Human Organs and Tissues Ordinance 2007
- Transplantation of Human Organs and Tissues Act 2010

In 2010, Pakistan also became signatory to the Declaration of Istanbul Custodian Group (DICG) to prevent organ trafficking.²³ DICG's goal is to implement WHO's Guiding Principles on Human Cell, Tissue, and Organ Transplantation.

As a result of the 18th amendment to the constitution of Pakistan, health care services were decentralized in 2011. Hence, organ transplantation was no longer nationally coordinated. Each province developed its own regulatory framework following the basic structure of 2010 Act:

- Khyber Pakhtunkhwa Medical Transplantation Regulatory Authority Act (Amendment) Act 2021
- AJK Transplantation of Human Organs and Tissues Ordinance, 2014
- Sindh Transplantation of Human Organs and Tissues (Amended) Act 2013
- Balochistan Transplantation of Human Organs and Tissues (Amendment) Act 2012
- Punjab Transplantation of Human Organs and Tissues (Amended) Act 2012

Unfortunately, after 17 years of authorization of the deceased organ donation law (2007), no single active donor transplant programme is in place in the country. Developing the deceased donor programmes in the country will be vital to counter the countrywide increasing organ shortage. The gradual shift from living to deceased donor transplantation will be only possible if constant and effective efforts are put in place for deceased organ donation development. With education, the behaviour of healthcare professionals and common people can be changed and a positive attitude towards deceased organ donation can be obtained. Public awareness, medical community interest, and government support are essential in initiating and establishing deceased donor programmes in Pakistan. In the future, deceased donor transplantation should replace living donor transplantation and become Pakistan's predominant form of transplantation. So far only seven deceased donors in Pakistan have been reported.

With its widening indications, the need for organ transplantation is growing globally. Currently, there is a crisis of organ shortage and a dire need to adopt ways to overcome it to save lives and improve the quality of life of patients. Efforts should be made to eliminate the barriers to organ donation, such as people's ignorance about organ donation and ethical and religious concerns. Using social media platforms to educate people, facilitate contacts, and match with unspecified donors is also worthwhile. Organ donation is a multifaceted field that, in addition to medical and scientific concerns, involves the interaction of social, religious, ethical, and legal domains. Therefore, it is necessary to take a multipronged approach to meet the ever-increasing demand of patients who are candidates for organ transplantation. The living donor liver transplant procedures performed in 2021 in Pakistan were around 500. This figure is only based on rough estimates as there is no available central repository in Pakistan that gathers liver transplant-related data.²⁴ The lack of exact statistics make it challenging to calculate the liver disease burden and the subsequent need for transplant procedures. Due to newly established liver transplant centres and the increasing number of liver transplant procedures being performed in the country, there is a serious need of establishing a liver transplantation registry in Pakistan, like established transplant registries of the United States, United Kingdom, and Australia.²⁵⁻²⁷

The shortage of fittingly trained doctors in liver transplant surgery is one of the significant challenges in

catering to the ever-growing needs of the patients. To address this challenge, the College of Physicians and Surgeons Pakistan (CPSP) has recently introduced a fellowship programme in hepato-pancreato-biliary (HPB) and liver transplant surgery that is a three-year training programme after the Fellowship of the College of Physicians and Surgeons (FCPS) in general surgery.²⁸ This paradigm shift is expected to transform the quality of post-graduate training in liver transplant surgery across Pakistan.

The private sector with its access to considerable technological, human, and financial resources could possibly become a driver of the Organ Transplant System Reform across the sector. Dr. Akbar Niazi Teaching Hospital (ANTH), a 500-bedded tertiary care teaching hospital in the heart of Islamabad, is translating the government's vision in the health sector. ANTH has the opportunity to serve as a hub for organ transplantation, attracting patients from neighboring areas and contributing to medical tourism, evolving a new discipline of Organ Transplant Surgery with postgraduate fellowships and certifications/diplomas. The establishment of public private partnerships (PPPs) has yielded encouraging results in health sector in the past, e.g. Sehat Sahulat Program (SSP) to which ANTH is a proud partner/stakeholder. Coverage through this PPP model needs to be expanded and strengthened in organ transplant services as well to ensure that all patients regardless of their financial capacity have the opportunity to avail this facility.

Increasing awareness and understanding among political leadership in the context of organ transplantation is crucial to formulate supportive policies and ensuring the success of organ donation programmes. To effectively sensitize political leadership in this domain, stakeholders like ANTH can provide comprehensive briefings, seminars, and educational materials that outline the complexities of organ transplantation, the persistent shortage of organs, and the life-saving potential of transplantation procedures. Emphasizing the societal and economic benefits, as well as the humanitarian aspects, can help garner political support. As a result, there will be a greater likelihood of promoting a conducive environment for legislative initiatives, funding support, and public policies that promote and enhance organ donation programmes, ultimately improving patient outcomes and alleviating the burden of liver disease in Pakistan.

References

1. Starzl TE, Marchioro TL, Vonkaulla KN, Hermann G, Brittain RS, Waddell WR. Homotransplantation of the liver in humans. *Surg Gynecol Obstet.* 1963;117:659-76.
2. Zarrinpar A, Busuttil R.W. Liver transplantation: past, present, and future. *Nat. Rev. Gastroenterol. Hepatol.* 2013;10(7):434-440. <https://doi.org/10.1038/nrgastro.2013.88>
3. Goldaracena N, Barbas AS. Living donor liver transplantation. *Curr Opin Organ Transplant.* 2019;24(2):131-137. <https://doi.org/10.1097/MOT.0000000000000610>
4. Morioka D, Egawa H, Kasahara M, Ito T, Haga H, Takada Y, et al. Outcomes of adult-to-adult living donor liver transplantation: a single institution's experience with 335 consecutive cases. *Ann Surg* 2007; 245: 315-325. <https://doi.org/10.1097/01.sla.0000236600.24667.a4>
5. Tan J, Khalil MAM, Kee T, Tiong HE, Khan TT, El-Madhoui I, et al. Deceased donor kidney transplant policies in Asia - implications on practice and recommendations for the future. *Lancet Reg Health Southeast Asia.* 2023; 21:100312. <https://doi.org/10.1016/j.lansea.2023.100312>
6. Khan SJ, Asif M, Aslam S, Khan WJ, Hamza SA. Pakistan's Healthcare System: A Review of Major Challenges and the First Comprehensive Universal Health Coverage Initiative. *Cureus.*2023;15(9):e44641. <https://doi.org/10.7759/cureus.44641>
7. Lee DS, Mir HR. Global systems of health care and trauma. *J Orthop Trauma.* 2014;28 Suppl 10:S8-10. <http://doi.org/10.1097/BOT.0000000000000213>.
8. Nishtar S, Bhutta ZA, Jafar TH, Ghaffar A, Akhtar T, Bengali K, et al. Health reform in Pakistan: a call to action. *Lancet.* 2013;381(9885):2291-7. [https://doi.org/10.1016/S0140-6736\(13\)60813-2](https://doi.org/10.1016/S0140-6736(13)60813-2).
9. GBD 2019 Pakistan Collaborators. The state of health in Pakistan and its provinces and territories, 1990-2019: A systematic analysis for the Global Burden of Disease Study 2019. *Lancet Glob Health.* 2023;11(2):e229-e243. [https://doi.org/10.1016/S2214-109X\(22\)00497-1](https://doi.org/10.1016/S2214-109X(22)00497-1)
10. Ali N. Charting a New Course to Hepatitis Elimination in Pakistan. *Health Policy Watch: Independent Global Health Reporting* [Internet] [cited 2024 Feb 20]. Available from: <https://healthpolicy-watch.news/charting-a-new-course-to-hepatitis-elimination-in-pakistan/>
11. Ullah K, Dogar AW, Ochani S, Shoaib A, Shah HH, Ur Rehman ME. Obstacles to the deceased donor transplantation in Pakistan. *BMJ Open Gastroenterol.* 2023;10(1):e001101. <https://doi.org/10.1136/bmjgast-2022-001101>
12. Waheed U, Saba N, Wazeer A, Ahmed S. A systematic review and meta-analysis on the epidemiology of Hepatitis B and Hepatitis C virus among Beta-Thalassemia major patients in Pakistan. *J Lab Physicians.* 2021;13(3):270-276. <https://doi.org/10.1055/s-0041-1731110>.

13. Gundlach JP, Linecker M, Dobbermann H, Wadle F, Becker T, Braun F. Patients Benefit from Liver Transplantation for Hepatocellular Carcinoma beyond Milan Criteria without Harming the Health Care System. *Cancers (Basel)*. 2022;14(5):1136. <https://doi.org/10.3390/cancers14051136>
14. First liver transplant carried out at SIUT. Daily Dawn [Internet]. [cited 2024 Feb 20]. Available from: <https://www.dawn.com/news/127054/first-liver-transplant-carried-out-at-siut>
15. Latif A, Bangash TA, Naz S, Naseer F, Butt AK. Experience of 100 living donor liver transplants in Shaikh Zayed hospital, Lahore, Pakistan. *Proc. SZPGMI*. 2017;31:31-38.
16. Dar FS, Bhatti AB, Dogar AW, Zia H, Amin S, Rana A, et al. The travails of setting up a living donor liver transplant program: Experience from Pakistan and lessons learned. *Liver Transpl*. 2015;21(7):982-90. <https://doi.org/10.1002/lt.24151>
17. Liver Transplant in Pakistan - A Milestone Achieved. Shifa International Hospital [Internet]. [cited 2024 Mar 18]. Available from: <https://www.shifa.com.pk/liver-transplant/>
18. Pir Abdul Qadir Shah Jeelani Institute of Medical Sciences, Gambat. Gambat Liver Transplant Program. [Internet]. [cited 2024 Mar 17]. Available from: <https://www.shifa.com.pk/liver-transplant/>
19. Pakistan Kidney and Liver Institute and Research Center. PKLI Liver Transplant Program [Internet]. [cited 2024 Mar 18]. Available from: <https://pkli.org.pk/liver-transplant/>
20. Butt MQ. Liver transplantation services in Pakistan Army. Pak. Armed Forces. Med. J. 2018;68(4):685-686.
21. Dogar AW, Ullah K, Ochani S, Ahmad HB. Evolving liver transplantation in Pakistan: Future challenges. *Ann Med Surg (Lond)*. 2022;82:104669. <http://doi.org/10.1016/j.amsu.2022.104669>.
22. Kamat N. Liver transplantation costs: Is it for the underprivileged? *Arch. Pharm. Pract.* 2016;7:181-182. <https://doi.org/10.4103/2045-080X.191987>
23. Danovitch GM, Chapman J, Capron AM, Levin A, Abbud-Filho M, Al Mousawi M, et al. Organ trafficking and transplant tourism: the role of global professional ethical standards-the 2008 Declaration of Istanbul. *Transplantation*. 2013;95(11):1306-12. <https://doi.org/10.1097/TP.0b013e318295ee7d>
24. Ullah K, Dogar AW, Mago A. The Need for a Liver Transplant Registry in Pakistan. *J Coll Physicians Surg Pak*. 2022;32(11):1511. <https://doi.org/10.29271/jcpsp.2022.11.1511>
25. Sutherland DE, Moudry-Munns KC, Gillingham K. Pancreas transplantation: Report from the International registry and a preliminary analysis of United States results from the New United Network for Organ Sharing (UNOS) Registry. *Clin Transpl* 1989; 19-43.
26. de Ville de Goyet J, Baumann U, Karam V, Adam R, Nadalin S, Heaton N, et al. European Liver, Intestine Transplant Association. European Liver Transplant Registry: Donor and transplant surgery aspects of 16,641 liver transplantations in children. *Hepatology*. 2022;75(3):634-645. <https://doi.org/10.1002/hep.32223>
27. Stormon MO, Hardikar W, Evans HM, Hodgkinson P. Paediatric liver transplantation in Australia and New Zealand: 1985-2018. *J Paediatr Child Health*. 2020;56(11):1739-1746. <https://doi.org/10.1111/jpc.14969>
28. CSPS introduces fellowship programme in HPB, liver transplant surgery. The News [Internet]. [cited 2024 Jan 20]. Available from: <https://www.thenews.com.pk/print/971303-cfsp-introduces-fellowship-programme-in-hpb-liver-transplant-surgery>