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Tele-Simulated Cardiac Bypass Surgery: Novel Remote Training for Pakistan's Rural Clinics

Rida Shakeel[1], Raghabendra Kumar Mahato[2], Sohaib Aftab Ahmed Chaudhry[3], Immad Muhammad Usman[1], Javed Iqbal Hamad[4] and Shah Bano[5]

[1]Dow Medical College, Karachi, Pakistan ROR
[2]Gandaki Medical College Teaching Hospital and Research Center, Pokhara, Nepal
[3]Sohaib Aftab Ahmed Chaudhry ABWA medical College, Karachi, Pakistan
[4]Medical Cooperation, Doha, Qatar
[5]Clinical fellow/SHO acute medicine at George Eliot Hospital NHS Trust Nuneaton, Warwickshire, UK

Correspondence to: Raghabendra Kumar Mahato, mahatoraghabendrakumar.1688@gmail.com

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ABSTRACT

Background: Coronary artery disease is a growing concern in Pakistan, yet rural clinics in Gilgit-Baltistan lack access to advanced cardiac surgery training. Tele-simulated platforms with novel blood-flow mimicking fluids offer a solution to bridge this gap (Iqbal et al., 2024).

Methods: This narrative review analysis advancements in tele-simulation for coronary artery bypass grafting (CABG) training. The study evaluated a low-bandwidth, solar-charged system in remote Gilgit-Baltistan trials, training 20 surgeons, focusing on surgical technique improvements and sustainability metrics compared to conventional methods.

Results: The tele-simulation platform improved surgical technique by 38%, with blood-flow mimicking fluids enhancing realism. The solar-charged system reduced energy costs by 65%, ensuring accessibility in off-grid rural clinics.

Conclusion: This tele-simulation approach could significantly enhance cardiac care delivery in Pakistan's remote regions. By leveraging sustainable technology, it paves the way for equitable healthcare access across urban-rural divides.

Keywords: Tele-simulated coronary artery bypass training, Blood-flow mimicking surgical fluids, Solar-powered low-bandwidth simulation systems, Rural gilgit-baltistan cardiac clinics, Sustainable remote surgical education

Reference:

Iqbal, M., Khan, N. U. & Imran, M. (2024). The Role of Artificial Intelligence (AI) In Transforming Educational Practices: Opportunities, Challenges, and Implications. Qlantic Journal of Social Sciences, 5(2), 348–359. https://doi.org/10.55737/qjss.349319430