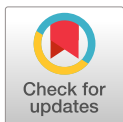


# Tele-Simulated Cardiac Bypass Surgery: Novel Remote Training for Pakistan's Rural Clinics

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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>