Global Surgery: Cost effective option for low- and middle-income countries

Due to technological development and multiple other factors, surgery has changed a lot during the last two decades. In the late 1970s, radical resection for carcinomas was the rule. Bigger incisions were considered to be made by bigger surgeons. With substantial understanding of cellular and molecular basis of the disease, removal has been replaced with conservation of the organs. Bigger incision has been replaced with minimal invasive surgery in every discipline. These changes resulted in lesser pain, shorter hospital stay and earlier return to work. More than 50% surgical work is now performed as day-care or in ambulatory surgical centres. In the last 25 years what has not changed is the need to meet the unmet surgical needs of people in low- and middle-income countries.

According to cautious estimates, around 5 billion people lack access to safe surgical services in low to middle income countries (LMIC). In other words, 9 out of 10 people do not have access even to the most basic surgical services. An estimated 4.2 million people will die due to complications resulting from unsafe surgery within 30-days of treatment. Minor injuries become life threatening and common birth defects become life long morbidity due to delay in surgical intervention. The neglected patient will suffer from life long consequences as a consequence of inadequate treatment for common conditions such as obstructed labour, cataract, and hernias.[1] These preventable morbidities and deaths are more than the cumulative deaths caused by HIV, malaria, and tuberculosis.[2] The financial burden of diseases requiring surgical treatment will grow to US$ 20.7 trillion by 2030.[3]

Perception of surgery as an expensive intervention, associated with prolonged hospital stay might be a barrier to widespread acceptance of its potential role in achieving global health goals, especially when compared with other public health measures.

Systematic reviews and meta-analysis were conducted by researchers for extraction of cost-effective ratios (CER) and Disability-adjusted life years (DALY) for essential surgical procedures and preventive medical procedures. Most of the researchers concluded that essential surgical procedures are cost effective in resource poor countries.[4]

Several landmark events occurred since the year 2015, mostly due to such evidence-based studies. The World Bank's disease control unit acknowledged the impact of diseases requiring surgery on the economic progress of the countries and prioritised high impact surgeries. The prioritisation of surgical diseases appeared in the third edition of Volume 1 of Essential Surgery (DCP 3). Surgical procedures were selected on the conceptual basis of essential medicine, as life-saving and the integral part of universal health. The Lancet Commission was convened to highlight the burden of surgical diseases and their solutions. Global alliance for surgical, obstetric, traum a, and anaesthesia care was established (G4 alliance). In an effort to address the increasing inequality in surgical services, the concept of Global Surgery has developed as a multi-disciplinary academic field. Global surgery aims to decrease inequity through technology, and provide safe, timely, and affordable surgical care to all those who are in need of surgery around the world. The prospect for access to safe surgical care was profoundly supported by the World Health Assembly in its resolution (WHA68.15) unanimously supported by the health representative of 194 countries in the year 2015. The Assembly resolved that access

to emergency and essential surgical care and anaesthesia is an integral part of universal health coverage. It is encouraging to see those efforts to decrease disparity in surgery continue with substantial participation of the professionals, surgical federations, and academic institutes. In the current year (2021 June,) the International College of Surgeon organised a conference with the theme *Global and Rural Surgery: Two Sides of the Same Coin*. The Global Surgery experience was shared by professionals from developing countries in resource-constrained situations. Some governmental, non-governmental, professional bodies and philanthropic agencies are engaging and working together to meet the ambitious mandate given by the World Health Assembly. The Global Surgery unit of the National Institute for Health Research, UK, is working with policy-makers and health care providers in the world to identify the barriers and potential solution to decrease in-equality to surgical access. Pakistan, as a signatory to WHA resolution, has taken the lead as Asia's first country to develop and launch a national surgical plan with technical support from multiple stakeholders in November 2018. In Pakistan and other LMICs barriers in safe surgical practices are poor infrastructure of health care facilities, inequity in distribution of resources, lack of collaboration, and accountability in health systems, and continuation of colonial policies in health and medical education. The strategy proposed by the global heath unit to strengthen surgical care in LMICs is to develop National Surgical, Obstetric, and Anaesthesia plans (NSOAPs), setting national standards of surgical training, and harmonising the practice within the context of national needs. For any surgical facility to be safe, basic minimum national standards and guidelines for practice needto be developed across the board. Clinical guidelines produce evidence-based recommendations with the aim to standardise patient care by identifying the best surgical practice in the given circumstances. Situation analysis in resource-constrained areas suggests that streamlined guidelines, which can update the clinicians for prioritisation of key practice measure are essential. Another problem for surgical workers in resource-constrained area is that standards are set and guidelines are established by experts of high-income countries, where the specific challenges in implementation faced by surgical workers in the developing world have not been addressed. Frequently, clinicians in LMICs have no alternative other than to use clinical guidelines published in high-income countries by researchers having limited experience of the pathologies, and financial and social challenges faced by the clinicians in lower resource settings. There remains a significant lack of national guidelines in the underdeveloped countries. The initiative was taken by the Global Health Research Unit for Global Surgery to build on most of the existing HIC guidelines by adapting them to LMIC settings.[5]

The time to reach a health care facility and the capacity of the health care facility are essential for safe surgery. Surgical outcome depends on the patient's reaching the health care facility in time by using affordable means of transport. If the patient manages to reach the facility in *golden* time, the health care facility must possess the capacity to diagnose and treat the condition safely. This is an important prognostic factor in case of trauma, obstructed labour or other emergency surgical situations.[6] Scaling up basic surgical care in LMICs could prevent 1.4 million deaths and 77.2 million disability adjusted life years per year. Low-cost high impact surgeries addressing essential surgical conditions as prioritised by the World Bank can transform the community without much consideration to the patient's income and scare resources. The World Bank's disease control unit published a report on the burden of surgical diseases and the huge economic impact that reducing this burden could have. For achieving the goal, the report recommends investing in surgical care and developing strategy for research and education for sustainability. The enthusiasm of the ever-growing population of medical students, residents, and faculty in medical institutes for decreasing the inequity in health through Global Surgery has paved the way for fast development of Global Academic Surgery. The landscape for Global Surgery is changing on all fronts; the demand by the residents/

postgraduates in hospitals necessitated a response from the American Board of Surgery and the Accreditation Council for Graduate Medical Education to agree on international rotations guidelines in 2011. Publication of these guidelines was supported by many surgical societies. The Association for Academic Surgery, Society of American Gastrointestinal and Endoscopic Surgeons are among the many to support their members for development of Global Surgery. In Pakistan, with a population of 227 million, high maternal mortality and increasing trauma due to violence and traffic accidents, an additional 10 million surgeries are estimated to be performed every year to meet this unmet need. Pakistan has six surgeons, obstetricians, and anaesthetists per 100,000 population against the minimum 20 per 100,000 population as proposed by the Lancet Commission on Global Surgery. Reducing the burden of surgical diseases and providing low-cost high impact surgery in Pakistan is only possible through collaborative partnership. Academic institutes and professional bodies have a leadership role and responsibility to develop partnership with institutes in HICs, and LMICs, to learn from their experience and develop resources for decreasing the inequity in access to safe surgery. Role of surgery in reducing the burden of surgical diseases remained relegated for a long time in the Sustainable Development Goal for universal health, mainly due to sequestration of surgeons in operating room and myopic public health policies. With the new information, improved technology and importance of surgical intervention in public health, surgery has become an indivisible, and indispensable part of universal health cover. Surgical and Anaesthesia care should become the robust component of national health policies at all levels in services and education. Pakistan has developed a National Surgical Plan and signed it on 10 July, 2021. Professional bodies of all surgical disciplines, anaesthesiologists and educational institutes such as College of Physicians and Surgeons must coordinate for the success and sustainability of Pakistan's National Vision for Surgical Care. The current health systems are insufficient, lack coordination and considerable disparity prevails in availing the surgical services in Pakistan. It is the responsibility of the ministry of National Health Services, Regulations and Co-ordination to develop effective coordination among all stakeholders of health care in Pakistan for the successful implementation of National Surgical Plan to meet the unmet surgical needs of people of Pakistan.

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