SPECIAL COMMUNICATION

Global perspective of paediatric surgery in low and middle income countries

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Abstract

There is huge burden of paediatric surgical diseases in low and middle income countries. Issues behind such a scenario include lack of trained paediatric surgeons, higher mortality due to infections, and poor post-operative care. The possible solution is improvement in the existing structure, which is government hospitals, because they are the most prevalent form of healthcare delivery in such countries. Proper coding system, research and identification of paediatric bellwether procedures can improve the existing health system. Task shifting and sharing can help in many areas. The doctors leaving their countries for better training and employment options should be properly incentivised locally. A lot can be done in terms of providing infrastructure, finances, changing mind-sets, developing expertise, making registry and rehabilitation. By doing so, millions of paediatric mortalities can be prevented in low and middle income countries.

Keywords: Global surgery, Bellwether procedures, Congenital anomalies.

Introduction

Surgery was considered a neglected stepson of global health, and paediatric surgery was a baby not born. Global health had its main focus on malnourishment and infectious diseases. It is now estimated that surgery shares 30% of the global disease burden.[1] Surgical care was considered expensive and approximately 5 billion people lack access to basic surgical care. Most of them belong to low- and middle-income countries (LMICs).[2] A landmark report from the Lancet Commission on Global Surgery (LCGS) was released and bellwether surgical procedures (Caesarean delivery, exploratory laparotomy and management of open fractures) were used to ascertain higher surgical care for the adult population.[2] Children comprise up to 50% of the population in LMICs.[3] A recent study from LMICs showed that 18.5% of children had a surgically correctable problem and 65% of those children had not received surgical care.[4] There is much to be done for children's surgery. The health policy-makers are now recognising the huge burden of paediatric surgical diseases and role of surgery in global health.

Congenital anomalies and trauma contribute significantly to the burden of disease in children in LMICs.[5] Bellwether procedures have not yet been identified for children as has been done for the adults. LMICs lack registries for congenital anomalies and more than 90% of worldwide congenital anomalies occur in LMICs.[6-8]

Issues in LMICs

Paediatric surgeons are mostly located in major cities alone in LMICs. Few children manage to reach a nearby health centre. A lack of trained paediatric surgeons, anaesthesiologists and nurses, poorly functioning operating rooms, inadequate equipment and poor resources contribute to the inability to deliver surgical care in children.[3,9-11] Also, more births occur at home rather than in hospitals. Surgeries on children have higher morbidity and mortality in LMICs due to infectious diseases and malnutrition. Paediatric surgical instruments are not readily available and disposable materials are often reused. Postoperative care is difficult because of a lack of ventilators, intensive care units (ICUs) and total parenteral nutrition.

Two million children were killed and over 6 million were injured in the last decade as a sequel of war.[12,13] Moreover, in LMICs, cooking is done over open flames, leading to high rates of burn injuries in children.[13] Once the patient arrives, trauma surgeons in LMICs face challenges with under-staffing and a lack of education in trauma protocols. If patients survive after initial resuscitation, deficiencies exist in rehabilitation.[14] Most deaths in refugee populations occur in children under the age of five years.

Congenital anomalies and injuries in children have the largest effect on the family's social condition.[2,15,16] Head injuries have the greatest implications for lifelong care.[13] In India, children with burns had delay in care due to low

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education level and unawareness of treatment options.[17] Having a baby with a congenital anomaly is a challenging life event for any parent.[18] In LMICs, there is minimal prenatal care and limited medical knowledge to prepare for a baby born with gastroschisis, omphalocele or other anomaly. Parents of such a child have been reported to have depression and embarrassment.[18] Difficulty in maintaining employment and also divorces are more common in families that have a disabled child.[14] In a study of cleft palates in Africa, parents reported that they would not name the baby until the cleft was repaired.[16] Infanticide has also been reported.[19]

People in LMICs may have cultural beliefs that prevent seeking care. Parents are often poorly educated and do not understand the symptoms of surgical diseases in their children.[20] This results in delay in seeking care.[21]

Many of the delays are due to the long distance from healthcare facilities and high travel costs.[20,21] Once parents reach a surgeon, care might be further delayed by more urgent cases or emergencies or due to huge backlog of cases. The cost is unaffordable for the families.[20,22,23] Furthermore, late presentation results in fluid disorders or malnutrition that need to be corrected prior to operation.[22,23]

Solutions

The most important thing is the improvement of government-run hospitals because they are the most prevalent form of healthcare delivery in LMICs. Private healthcare facilities offer services for a fee and are driven by profits. Non-governmental organisations (NGOs) are helping the children in LMICs and their role is very important in such countries.[24,25]

The LCGS concluded that improving surgical conditions will lead to improved economic development in LMICs.[2] A study in Bangladesh showed that people had to sell their households in order to meet health expenses.[26] It is, therefore, not difficult to understand why many children requiring surgeries with postoperative outpatient care do not receive the needed surgery due to prohibitive costs.[27] Universal health coverage (UHC) is a leading policy goal supported by the World Health Organisation (WHO), World Bank, United Nations (UN)[28] and many governments in LMICs.[29] The Lancet Commission on Investment in Health has laid out a path which emphasises on pro-poor progressive universalism because such a pathway promotes the greatest magnitude of health gains in LMICs.[29,30] Research in Mexico and Thailand suggests that pro-poor progressive universalism can be achieved through the targeting of poor people by the choice of surgical intervention covered or fee exemptions for surgery and anaesthesia care.[30-32]

The LCGS suggested factors that are important for countries to consider when deciding which surgical procedures, packages and platforms to include in their coverage policies using country-specific data and contexts.[26] The WHO stated that proper management and use of information "will determine the system's effectiveness in detecting health problems, defining priorities, identifying innovative solutions and allocating resources to improve health outcomes".[33] So far, only 1% of deaths are reported by cause in low-income countries (LICs).[34] World Health Survey (WHS) implemented by the WHO in 2002-04 comprised 70 countries with over 300,000 participants. It has the greatest number of surgically relevant questions, including cancer screening, vision care and injuries.[35]

The LMICs need to have proper coding system. The International Classification of Diseases (ICD) is the most common and well-known coding system. The LCGS concluded that all people should have access to safe, affordable surgical and anaesthetic care when needed regardless of their geographical location or socioeconomic status.[2] Bellwether procedures represent the ability to perform a full range of essential surgical procedures. Paediatric bellwether procedures have not yet been identified. Recently gastroschisis has been proposed as a paediatric bellwether procedure.[38] Mortality in HICs with robust health systems approaches zero for this congenital anomaly, while in several LMICs the mortality nears 100%.[11,36]

LMICs need to start research because only by doing this they can recognise the actual burden of surgical diseases. This will lead to increased recognition of surgical care as a required component of healthcare and a critical part of global health development[1]. Among recent LMIC medical graduates there is a lack of interest in surgery as a career.[37] The factors include duration and difficulty of the training experience, lifestyle, exposure to the operating room environment and limited availability of mentorship. These latter considerations are even more pointed in LMICs where surgical infrastructure is inadequate, the volume of surgery is limited and contact

with surgeons, including paediatric surgeons, is lacking. Furthermore, any potential mentors are often too busy clinically to provide proper mentorship.[37] These factors need to be addressed to develop local expertise.

The infrastructure needs to be improved. Task shifting and sharing can help in many areas. With surgical disease burden becoming recognised as a worldwide public health issue, the LCGS and the DCP3 project on essential surgical and anaesthesia care have all emphasised the need to greatly improve LMIC surgical system infrastructure.[1,2] Although not broadly seen within paediatric surgery, general practitioners and other clinicians have been trained to perform certain surgical procedures with success in some LMICs with the goal to more rapidly expand the workforce and provide emergency access where surgeons are unavailable.[2,9]

Conclusion

Global health has extended its domains into surgery. The issues for paediatric surgery are challenging in LMICs which are still fighting for access to surgical care and the quality in surgical care. There is a lot that needs to be done in providing infrastructure, finances, changing mind-sets, developing expertise, making registry and rehabilitation. The paediatric population is huge in LMICs and by focussing on these surgical aspects, we can prevent a lot of mortalities.

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